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Item 5 of the provisional agenda

FINAL REPORT OF THE JOINT INTERGOVERNMENTAL GROUP OF EXPERTS ON MARITIME LIENS AND MORTGAGES AND RELATED SUBJECTS

The attached document (JIGE(VI)/8)*/ contains the final report of the Joint UNCTAD/IMO Intergovernmental Group of Experts on Maritime Liens and Mortgages and Related Subjects, which was adopted at its sixth session, held in London from 25 to 29 November 1989.

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IMO/UNCTAD
Joint Intergovernmental Group of
Experts on Maritime Liens
and Mortgages and Related Subjects

FINAL REPORT OF THE JOINT INTERGOVERNMENTAL GROUP OF EXPERTS ON MARITIME LIENS AND MORTGAGES AND RELATED SUBJECTS

1 The Joint Intergovernmental Group of Experts on Maritime Liens and Mortgages and Related Subjects was established by the United Nations Conference on Trade and Development (UNCTAD) and the International Maritime Organization (IMO), pursuant to the recommendation contained in resolution 6(XI) of the Working Group on International Shipping Legislation of UNCTAD, endorsed by the Trade and Development Board at its thirty-second session, and pursuant to the recommendation of the Legal Committee of IMO, endorsed by the Council of IMO at its fifty-sixth session.

2 The mandate of the Joint Intergovernmental Group of Experts, as approved by the two organs, was to:

> "Examine the subject of maritime liens and mortgages, including the possible consideration of:
>
> (a) the review of the maritime liens and mortgages convention and related enforcement procedures, such as arrest;
>
> (b) the preparation of model laws or guidelines on maritime liens, mortgages and related enforcement procedures, such as arrest;
>
> (c) the feasibility of an international registry of maritime liens and mortgages."

3 The Committee on Shipping of UNCTAD, in its resolution 61(XIII), paragraph 15, however, urged the Joint Group to complete its work during 1989 and to present its final report for consideration by the Committee on Shipping at its fourteenth session. The Legal Committee of IMO, at its fifty-sixth session, recommended that the report of the Joint Group should be submitted to the Council of IMO through the Legal Committee. This recommendation was approved by the Council, at its fifty-sixth session.

4 The Joint Group held six sessions, alternately in Geneva and London, using the time and resources allocated to the Working Group on International Shipping Legislation of UNCTAD and the Legal Committee of IMO.

5 During the six sessions, the Joint Group reviewed the existing international instruments on maritime liens and mortgages. The Joint Group also gave consideration to the remaining items in its terms of reference. The results of the work of the Joint Group on the various matters raised with terms of reference are summarized below.

Maritime liens and mortgages

6 In reviewing the international legal regime on maritime liens and mortgages, the Joint Group gave detailed consideration to:

- the International Convention for the Unification of Certain Rules Relating to Maritime Liens and Mortgages, 1967;

- the International Convention for the Unification of Certain Rules of Law Relating to Maritime Liens and Mortgages, 1926; and

- the Draft Revision of the 1967 Convention for the Unification of Certain Rules Relating to Maritime Liens and Mortgages prepared by the Comité Maritime International (CMI).

7 In the light of the results of this review, the Joint Group agreed to prepare the draft provisions for a convention on maritime liens and mortgages. For this purpose, the Joint Group gave detailed consideration to a number of proposals put forward by Government delegations and observer delegations, with a view to producing a text which would receive wide acceptance by Governments and the shipping community.

8 At its sixth session, the Joint Group completed the final reading of the draft provisions. The draft articles agreed by the Joint Group are reproduced in the annex to this report.

9 The Joint Group decided that the draft convention was sufficiently developed for submission to a diplomatic conference for adoption. (See recommendations, paragraph 16.)

Review of enforcement procedures such as arrest

10 The Joint Group held an exchange of views concerning the possible review of the International Convention Relating to the Arrest of Seagoing Ships of 1952. The Joint Group agreed that it might be necessary to amend this convention in the light of the decisions taken by a diplomatic conference in respect of the draft maritime liens and mortgages convention. It was, however, felt that in view of the close relationship between the Arrest Convention and a future Convention on Maritime Liens and Mortgages, preparation of any such amendments would be premature at this stage and had to be postponed until after the adoption of the Convention on Maritime Liens and Mortgages by a diplomatic conference.

Preparation of model laws or guidelines on maritime liens and mortgages and related enforcement procedures, such as arrest

11 At its fifth session, the Joint Group reached the conclusion that the preparation of model laws or guidelines on maritime liens and mortgages and related subjects could be properly undertaken only after completion of the work on the relevant conventions. The Joint Group accordingly agreed that it would be premature to take a decision on the preparation of such model laws and guidelines at this stage.[1/]

1/ See the report of the Joint Intergovernmental Group of Experts on Maritime Liens and Mortgages and Related Subjects, on its fifth session. Document JIGE(V)/4, annex 1, paragraph 217.

READEX FICHE

Feasibility of an international registry of maritime liens and mortgages

12 In a preliminary exchange of views on the question, at the first session of the Joint Group,[2/] many delegations stated that they doubt if the registration of maritime liens was desirable or even possible. In this context, particular reference was made to the difficulty of registering certain types of claims, such as crews' wages. It was, however, the view of some delegations that, with the greatly improved systems of communication currently available, the registration of certain maritime liens would be feasible and, accordingly, that the matter merited further consideration, taking into account the possible costs of such a system. These delegations suggested that a system of international registration of maritime liens and mortgages would lead to a desirable increase in commercial confidence in maritime transactions in general, and also to a reduction in the number of "hidden maritime liens".

13 At its fifth session, the Joint Group agreed that work on an international register for maritime liens and mortgages and related subjects should not be taken up at this stage.[3/]

Expression of appreciation

14 The Joint Group expressed its appreciation to the Secretariats of IMO and UNCTAD for the efficient way in which they had serviced the meetings of the Joint Group and the useful documentation which they had prepared to assist the work of the Joint Group.

15 The Joint Group decided to record its gratitude to the Chairman of the Joint Group for the able manner in which he has presided over and guided the deliberations of the Joint Group at all its sessions. The Joint Group also expressed its appreciation to the Vice-Chairman and Rapporteur.

2/ See the report of the Joint Intergovernmental Group of Experts on Maritime Liens and Mortgages and Related Subjects, on its first session. Document JIGE(I)/4, annex 1, paragraphs 53-56.

3/ See the report of the Joint Group on its fifth session. Document JIGE(V)/4, paragraph 218.

Recommendations

16 At its sixth session, the Joint Group agreed to the following recommendations:

I The Group of Experts recommends to the UNCTAD Committee on Shipping and the IMO Legal Committee to consider favourably, in the light of the useful work achieved by the Joint Intergovernmental Group of Experts on Maritime Liens and Mortgages and Related Subjects, the convening of a diplomatic conference on the review of the draft maritime liens and mortgages convention so as to allow the UNCTAD Trade and Development Board and the IMO Council to suggest such a conference to the relevant United Nations bodies.

II With regard to arrest, the Joint Group recommends that consideration of any further work be postponed until after the adoption of the final text of the Convention on Maritime Liens and Mortgages by a diplomatic conference.

The Joint Group recommends that the relevant bodies of UNCTAD and IMO consider making provision for further meetings of the Joint Group, in the light of the results of the diplomatic conference.

***

ANNEX

PART A

DRAFT ARTICLES FOR A CONVENTION ON MARITIME LIENS AND MORTGAGES

Article 1

Recognition and enforcement of mortgages, "hypothèques" and charges

Mortgages, "hypothèques" and registerable charges of the same nature, which registerable charges of the same nature will be referred to hereafter as "charges", effected on seagoing vessels shall be recognized and enforceable in States Parties provided that:

(a) such mortgages, "hypothèques" and charges have been effected and registered in accordance with the law of the State in which the vessel is registered;

(b) the register and any instruments required to be deposited with the register in accordance with the law of the State in which the vessel is registered are open to public inspection, and that extracts of the register and copies of such instruments are obtainable from the registrar; and

(c) either the register or any instruments referred to in subparagraph (b) specifies at least the name and address of the person in whose favour the mortgage, "hypothèque" or charge has been effected or that it has been issued to bearer, the maximum amount secured, if that is a requirement of the national law of the State of registration, or, otherwise, if that amount is specified in the instrument creating the mortgage, "hypothèque" and charge, and the date and other particulars which, according to the law of the State of registration, determine the rank as respects other registered mortgages, "hypothèques" and charges.

Article 2

Ranking and effects of mortgages, "hypothèques", and charges

The ranking of registererd mortgages, "hypothèques" or charges, as between themselves and, without prejudice to the provisions of this Convention, their effect in regard to third parties shall be determined by the law of the State of registration; however, without prejudice to the provisions of this Convention, all matters relating to the procedure of enforcement shall be regulated by the law of the State where enforcement takes place.

Article 3

Voluntary change of ownership or registration

1 In the event that a voluntary change of ownership or voluntary change of registration entails the deregistration of the vessel from the national register of a State Party, such State Party shall not permit the owner to deregister the vessel unless all mortgages, "hypothèques" or charges are previously deregistered or the written consent of all holders of such mortgages, "hypothèques" or charges is obtained.

2 Without prejudice to article 11.3, a vessel which is or has been registered in a State Party shall not be eligible for registration in another State Party unless either:

(a) a certificate has been issued by the former State to the effect that the vessel has been deregistered; or

(b) a certificate has been issued by the former State to the effect that the vessel will be deregistered with immediate effect, at such time as the new registration is effected. The date of registration shall be the date of deregistration of the vessel by the former State.

Article 4

Maritime liens

1 Each of the following claims against the owner, demise charterer, manager or operator of the vessel shall be secured by a maritime lien on the vessel:

(a) claims for wages and other sums due to the master, officers and other members of the vessel's complement in respect of their employment on the vessel, including costs of repatriation and social insurance contributions payable on their behalf;

(b) claims in respect of loss of life or personal injury occurring, whether on land or on water, in direct connection with the operation of the vessel;

(c) claims for salvage;

(d) claims for port, canal, and other waterway dues and pilotage dues;

(e) claims based on tort arising out of physical loss or damage caused by the operation of the vessel other than loss of or damage to cargo, containers and passengers' effects carried on the vessel.

2 No maritime lien shall attach to a vessel to secure the claims as set out in subparagraphs (b) and (e) of paragraph 1 which arise out of or result from oil pollution damage for which compensation is payable to the claimants pursuant to the International Convention on Civil Liability for Oil Pollution Damage, 1969 or of any amendments or protocol thereto which is in force, or the radioactive properties or a combination of radioactive properties with toxic, explosive or other hazardous properties or nuclear fuel or of radioactive product or waste.

Article 5

Priority of maritime liens

1 The maritime liens set out in article 4 shall take priority over registered mortgages, "hypothèques" and charges, and no other claim shall take priority over such maritime liens or over such mortgages, "hypothèques" or charges which comply with the requirements of article 1, except as provided in article 6bis.

2 The maritime liens set out in article 4 shall rank in the order listed, provided however that maritime liens securing claims for salvage shall take priority over all other maritime liens which have attached to the vessel prior to the time when the operations giving rise to the said liens were performed.

3 The maritime liens set out in each of subparagraphs (a), (b), (d) and (e) of paragraph 1 of article 4 shall rank pari passu as between themselves.

4 The maritime liens securing claims for salvage set out in subparagraph (c) of paragraph 1 of article 4 shall rank in the inverse order of the time when the claim secured thereby accrued. Such claims shall be deemed to have accrued on the date on which each salvage operation was terminated.

Article 6

Other liens

Each State Party may grant [maritime liens or] other liens to secure claims other than those referred to in article 4. Such liens shall rank after the maritime liens set out in article 4 and after registered mortgages, "hypothèques" or charges which comply with the provisions of article 1.

[Article 6bis

Rights of retention

1 Each State Party may grant [under national law] a right of retention in respect of a vessel in possession of either:

(a) a shipbuilder, to secure claims for the building of the vessel; or

(b) a shiprepairer, to secure claims for repair, including reconstruction of the vessel effected during such possession,

2 Such right of retention shall not prejudice the enforcement of the maritime liens set out in article 4, but may be exercisable against the vessel, notwithstanding the existence of any registered mortgages, "hypothèques" or charges[1/]. Such right of retention shall be extinguished when the vessel ceases to be in the possession of the shipbuilder or shiprepairer, otherwise than in consequence of an arrest or seizure.]

1/ In the light of the discussions of the Sessional Group during the sixth session of the Joint Intergovernmental Group of Experts, the Chairman suggested that in article 11, after paragraph 2, the following text be inserted as a new paragraph 3:

"3 If at the time of the forced sale the vessel is in the possession of a shipbuilder or of a shiprepairer who under the law of the State Party in which the sale takes place enjoys a right of retention, such shipbuilder or shiprepairer must surrender possession of the vessel to the purchaser but is entitled to obtain satisfaction of his claim out of the proceeds of sale after the satisfaction of the claim of holders of maritime liens mentioned in article 4."

This text should be accompanied by the following consequential changes:

- present paragraph 3 would become paragraph 4;
- in paragraph 2, the sentence in the first brackets and the brackets around the last sentence should be deleted;
- in article 6bis, paragraph 2, the first sentence should be deleted."

(See JIGE(VI)/7, paragraphs 50 to 57.)

Article 7

Characteristics of maritime liens

Subject to the provisions of article 11, the maritime liens [set out in article 4] follow the vessel, notwithstanding any change of ownership or of registration or of flag.

Article 8

Extinction of maritime liens by lapse of time

1 The maritime liens set out in article 4 shall be extinguished after a period of one year from the time when the claims secured thereby arose unless, prior to the expiry of such period, the vessel has been arrested or seized, such arrest or seizure leading to a forced sale.

2 The one-year period referred to in the preceding paragraph shall not be subject to suspension or interruption, provided, however, that time shall not run during the period that the arrest or seizure of the vessel is not permitted by law.

Article 9

Assignment and subrogation

The assignment of or subrogation to a claim secured by a maritime lien set out in article 4 entails the simultaneous assignment of or subrogation to such maritime liens.

Article 10

Notice of forced sale

1 Prior to the forced sale of a vessel in a State Party, the competent authority in such State Party shall ensure that notice in accordance with this article is provided to:

(a) the authority in charge of the register in the State of registration;

(b) all holders of registered mortgages, "hypothèques" or charges which have not been issued to bearer; and

(c) all holders of registered mortgages, "hypothèques" or charges issued to bearer and all holders of the maritime liens set out in article 4, provided that the competent authority conducting the forced sale receives notice of their respective claims.

2 Such notice shall be provided at least 30 days prior to the forced sale and shall contain either:

(a) the time and place of the forced sale; or

[(b) such particulars concerning the forced sale or the proceedings leading to the forced sale as the State conducting the proceedings shall determine is sufficient to protect the interests of persons entitled to notice.]

3 In addition to any notice by publication which may be required by the national law of the State conducting the forced sale, the notice specified in paragraph (2) of this article shall be written and may be given by receipted post or by any electronic or other appropriate means which provide confirmation of receipt.

[4 If permitted by the national law of the State conducting the proceedings, any person entitled to receive notice in accordance with this article may waive such notice.]

Article 11

Effects of forced sale

1 In the event of the forced sale of the vessel in a State Party, all mortgages, "hypothèques" or charges, except those assumed by the purchaser with the consent of the holders and all liens and other encumbrances of whatsoever nature, shall cease to attach to the vessel, provided however that:

(a) at the time of the sale, the vessel is in the area of the jurisdiction of such State,

(b) the sale has been effected in accordance with the law of the said State and the provisions of article 10 and this article of this Convention.

2 The costs and expenses arising out of the arrest or seizure and subsequent sale of the vessel, including the costs incurred for the upkeep of the vessel from the time of arrest or seizure and the costs of repatriation of the crew and of the distribution of the proceeds, shall be paid first out of the proceeds of sale. The balance of the proceeds shall be distributed in accordance with the provisions of this Convention, to the extent necessary to satisfy the respective claims.

3 When a vessel registered in a State Party has been the object of a forced sale in a State Party, the competent authority shall, at the request of the purchaser, issue a certificate to the effect that the vessel is sold free of all mortgages, "hypothèques" or charges, except those assumed by the purchaser, and of all liens and other encumbrances, provided that the requirements set out in paragraphs 1(a) and (b) have been complied with. Upon production of such certificate, the registrar shall be bound to delete all registered mortgages, "hypothèques" or charges except those assumed by the purchaser, and to register the vessel in the name of the purchaser or to issue a certificate of deregistration for the purpose of reregistration, as the case may be.

4 States Parties shall ensure that any proceeds of a forced sale are actually available and freely transferable.

Article 12

Scope of application

1 Unless otherwise provided in this Convention, its provisions shall apply to all seagoing vessels registered in a State Party or in a State which is not a State Party.

2 Nothing in this Convention shall create any rights in, or enable any rights to be enforced against, any vessel owned, operated or chartered by a State and appropriated to public non-commercial services.

Article 13

Communication between States Parties

For the purpose of articles 3, 10 and 11, the competent authorities of the States Parties shall be authorized to correspond directly between themselves.

Article 14

Conflict of conventions

Nothing in this Convention shall affect the application of an international convention providing for limitation of liability or of national legislation giving effect thereto.

Article 15

Temporary change of flag

If a seagoing vessel registered in one State is permitted to fly temporarily the flag of another State, the following shall apply:

(a) References in this Convention to the "State in which the vessel is registered" or to the "State of registration" shall be deemed to be references to the State in which the vessel was registered immediately prior to the change of flag, and references to the "competent authorities in charge of the register" shall be deemed to be references to the competent authority in charge of the register in that State.

(b) The law of the State of registration shall be determinative for the purpose of recognition of mortgages, "hypothèques" and charges.

(c) The State of registration shall require a cross-reference entry in its register specifying the State whose flag the vessel is permitted to fly temporarily; likewise, the State whose flag the vessel is permitted to fly temporarily shall require a cross-reference entry in its register[2/] specifying the State of registration.

(d) No State Party shall permit a vessel registered in that State to fly temporarily the flag of another State unless all registered mortgages, "hypothèques" or charges on that vessel have been previously satisfied or the written consent of the holders of all such mortgages, "hypothèques" or charges has been obtained[3/].

(e) The notice referred to in article 10 shall be given also to the competent authority in charge of the vessel's record in the State whose flag the vessel is permitted to fly temporarily.

2/ At the fifth session, a number of delegations emphasized tht the new convention should not in any way contain provisions which would allow dual registration. Accordingly, some delegations proposed to use the term "recorded in" in relation to vessels permitted to fly temporarily another flag without reference to "registration" so as to make it clear that only one registration existed. (See JIGE (V)/4, paragraphs 183 and 184.)

At the sixth session, concern was expressed over the use of the word "register" in relation to the recording of the temporary change of flag. It was therefore proposed to use the term "vessel's record" since the phrase had been used in other paragraphs of article 15. (See JIGE (VI)/7, paragraph 114.)

3/ One delegation proposed to amend paragraph (d) by deleting the words "all registered mortgages, 'hypothèques' or charges on the vessel have been previously satisfied". This proposal received support from many delegations, but it was noted that the draft proposed would require further amendment in the light of the discussions in the Sessional Group. (See JIGE (VI)/7, paragraphs 115 and 116.)

(f) Upon production of the certificate of deregistration referred to in paragraph 3 of article 11, the competent authority in charge of the vessel's record in the State whose flag the vessel is permitted to fly temporarily shall, at the request of the purchaser, issue a certificate to the effect that the right to fly the flag of that State is revoked.

(g) Nothing in this Convention is to be understood to impose any obligation on States Parties to permit foreign vessels to fly temporarily their flag or national vessels to fly temporarily a foreign flag.

PART B

DRAFT FINAL CLAUSES

Article A

Signature, ratification, acceptance, approval and accession

1 This Convention shall be open for signature at ..... from ..... to .....and shall thereafter remain open for accession.

2 States may express their consent to be bound by this Convention by:

(a) signature without reservation as to ratification, acceptance or approval; or

(b) signature subject to ratification, acceptance or approval, followed by ratification, acceptance or approval; or

(c) accession.

3 Ratification, acceptance, approval or accession shall be effected by the deposit of an instrument to that effect with.....

Article B

Entry into force

1 This Convention shall enter into force .....following the date on which ..... States have expressed their consent to be bound by it.

2 For a State which expresses its consent to be bound by this Convention after the conditions for entry into force thereof have been met, such consent shall take effect ..... after the date of expression of such consent.

Article C

Denunciation

1 This Convention may be denounced by any State Party at any time after the expiry of ..... from the date on which this Convention enters into force for that State.

2 Denunciation shall be effected by the deposit of an instrument of denunciation with ...

3 A denunciation shall take effect one year, or such longer period as may be specified in the instrument of denunciation, after the receipt of the instrument of denunciation by .....

Article D

Revision and amendment

1 A conference of States Parties for the purpose of revising or amending this Convention shall be convened by ... at the request of one third of the States Parties.

2 Any consent to be bound by this Convention, expressed after the date of entry into force of an amendment to this Convention, shall be deemed to apply to the Convention, as amended.

Article E

National laws

Each State Party shall communicate to the depositary the texts of any legislative and other measures promulgated in order to implement this Convention.

Article F

Depositary

1 This Convention shall be deposited with ...

2 The depositary shall:

(a) inform all States which have signed this Convention or acceded thereto, and all Members of the Organization, of:

(i) each new signature or deposit of expression of consent to be bound by this Convention together with the date thereof;

(ii) the date of the entry into force of this Convention;

(iii) the deposit of any instrument of denunciation of this Convention together with the date on which it is received and the date on which the denunciation takes effect;

(iv) the receipt of any reservation, declaration or notification made under this Convention;

(v) the receipt of any texts communicated in accordance with article E;

(b) transmit certified true copies of this Convention to all States which have signed this Convention or acceded thereto.

Article G

Languages

This Convention is established in a single original in the Arabic, Chinese, English, French, Russian and Spanish languages, each text being equally authentic.

DONE AT ..... this ..... of ..... one thousand nine hundred and ninety.....

IN WITNESS WHEREOF the undersigned being duly authorized by their respective Governments for that purpose have signed this Convention.

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TRADE AND DEVELOPMENT BOARD
Committee on Shipping

DEVELOPMENTS IN MULTIMODAL TRANSPORT

Report by the UNCTAD secretariat

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Introduction

(i). In its resolution 61 (XIII) on its programme of work, the Committee on Shipping requested the UNCTAD secretariat to complete the outstanding requests for studies on multimodal transport and containerization.[1] This report has been prepared in response to that request.

(ii). In its resolution 60 (XII) on multimodal transport and technological developments, ports, international shipping legislation, technical assistance and training, and assistance among developing countries, the Committee on Shipping requested the UNCTAD secretariat:

> "To continue its examination of technological developments in data processing, including development of the MULTISHIP programmes, and to make recommendations thereon to the Committe."[2]

(iii). This resolution also instructed the UNCTAD secretariat:

> "To elaborate a standard form and model provisions for multimodal transport documents, in close collaboration with the competent commercial parties and international bodies, based on the Hague Rules and Hague/Visby Rules as well as existing documents such as the FBL of the International Federation of Freight Forwarders Associations (FIATA) and the International Chamber of Commerce (ICC) uniform rules for a combined transport document;"[3]

(iv). The resolution further requested the UNCTAD secretariat,

> "To co-operate with the regional commissions in conducting studies for identifying and improving the role of freight forwarders in developing countries."[4]

(v). Committee resolution 61 (XIII) also requested the UNCTAD secretariat:

> "To start the operation of a reference library for multimodal container tariff rules ... within the resources available to UNCTAD and to investigate, also within existing resources, the possibilities of electronic storage and retrieval of data and report thereon to the Committee on Shipping at its fifteenth session."[5]

In view of developments regarding the reference library, it has been found useful to report to the Committee already at its fourteenth session.

(vi). In paragraph 23 of the same resolution, the Committee urged the UNCTAD secretariat:

> "To continue its work to expand the Automatic System for Customs Accounting and Statistical Data Acquisition, Control and Management (ASYCUDA) to include transport statistics...".

(vii). This report is consequently divided into four parts covering issues relating respectively to technological developments (chapter one), freight forwarding (chapter two), multimodal transport documents (chapter three), and the reference library (chapter four). Where appropriate it makes proposals for further work which the Committee may wish to consider and endorse. These proposals should be considered in conjunction with those contained in the secretariat report "Inventory of existing mandates and new draft programme of work in the fields of multimodal transport and technological developments" (TD/B/C.4/323).

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1 Report of the Committee on Shipping on its thirteenth session, (TD/B/C.4(XIII)/Misc.2), Annex I.

2 Report of the Committee on Shipping on its twelfth session, (TD/B/C.4(XII)/Misc.3), Annex I.

3 *Ibid.*

4 *Ibid.*

5 Report of the Committee on Shipping on its thirteenth session, *op. cit.*

Summary and conclusions

1. Technological developments in the field of transport-related data processing are progressing at a very rapid pace in developed countries, leaving many developing countries behind. The same is true in the field of international physical distribution, where multimodal transport operators (MTOs) from developed countries are expanding their services in terms of both services offered and technology employed.

2. Unless concerted action is taken by the developing countries themselves, the improvements they have made over the last two decades in the development of their own transport companies may be irrevocably lost and the majority of such companies may be relegated to the status of short-haul subcontractors. Developing countries should take the earliest possible action to to implement appropriate measures, relating in particular to:

(1) Acquiring the necessary expertise and technology to utilize modern electronic data interchange (EDI) within their transport industries;

(2) Modifying existing regulations to take these latest developments into consideration so as to facilitate the introduction of new technologies; and,

(3) Creating sufficiently large transport organizations that will have the capabilities for operating competitive physical distribution logistics services.

3. Such action should not be of a restrictive or protective nature impeding the use of these technological developments, since this in many cases will not benefit national economies. It should instead provide an opportunity to acquire the latest transport concepts and technologies, coupled with a broadening of expertise, particularly in the management of transport companies.

4. The development or rather the transformation of freight forwarders into MTOs and their joining forces with other transport-related companies would seem to open the possibility of indigenous transport organizers attaining a size which will allow them to play a greater role in the transport of goods from and to developing countries.

5. The elaboration of a standard form and model provisions for multimodal transport (MT) documents based on the Hague Rules and the Hague-Visby Rules is progressing in close co-operation with the competent commercial parties. A new set of uniform rules for MT documents has been drafted jointly with the ICC and various commercial organizations associated with it. It is the intention to submit the draft rules to the Committee for its information. Once agreed to by the various national bodies of the ICC, the new rules will be published as "ICC/UNCTAD Uniform Rules for a Multimodal Transport Document", replacing the current ICC Uniform Rules for a Combined Transport Document. Subsequently, a standard form of MT document will be prepared in compliance with Committee resolution 60 (XII).

6. The reference library for multimodal container tariff rules, established at the request of the Committee on Shipping, has not met with the response expected, and it is suggested that the library be terminated.

SURVEY OF THE QUALITY AND USEFULNESS OF UNCTAD PUBLICATIONS AND OF THEIR END-USERS

The UNCTAD secretariat, in the context of its programme evaluation activities and in response to intergovernmental requests, is seeking the opinions of end-users in order to have basic data for assessing the quality, usefulness and effectiveness of *inter alia* its research reports and publications. As the success of such an exercise is critically dependent on an adequate rate of response we should appreciate it if you would take time to answer the questions below and submit any other comments that you may have concerning the current document.

1. **Title or symbol number of document** . . . . . .

2. **When did you receive the document?** . . . . . .

3. **How did you receive the document?** *(tick one or more boxes)*

Through Permanent Mission to United Nations	( )	From UN bookshop	( )
From ministry or government office	( )	From university libraries	( )
Directly from UNCTAD secretariat	( )	Own request	( )
By participating in an UN/UNCTAD intergovernmental meeting	( )	UNCTAD initiative	( )
		Other (please specify)	. . . . .
By participating in an UN/UNCTAD sponsored training course or seminar	( )	. . . . .	
		. . . . .	

4. **For what main purposes do you use the document?** *(tick one or more boxes)*

Policy formulation	( )	Education and training	( )
Analysis and research	( )	Management	( )
Legislation	( )	Other (please specify)	. . . . .
Background information	( )	. . . . .	

5. **How do you rate the document as regards:**

Its usefulness to your work *(tick one box)*

Extremely useful ( ); Very useful ( ); Useful ( ); Marginally useful ( ); Not at all ( ).

Its quality, in terms of the following aspects *(tick one box in each case)*:

	Outstanding	*Excellent*	*Good*	*Adequate*	*Poor*
Presentation and readability	( )	( )	( )	( )	( )
Originality of ideas	( )	( )	( )	( )	( )
Wealth of information	( )	( )	( )	( )	( )
Up-to-date information	( )	( )	( )	( )	( )
Technical accuracy	( )	( )	( )	( )	( )
Quality of analysis, including objectivity	( )	( )	( )	( )	( )
Validity of conclusions	( )	( )	( )	( )	( )
Clarity of recommendations	( )	( )	( )	( )	( )
Comprehensiveness of coverage	( )	( )	( )	( )	( )

6. **Other observations** *(if any)* . . . . . .

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Finally, we would appreciate it if you could provide the following information about yourself:

Name . . . . . .Occupation/Functional title . . . . . .

Address . . . . . .

Your answers are for internal use and will be kept confidential. Thank you for your co-operation.

Please forward the questionnaire to : PROGRAMME CO-ORDINATION AND EVALUATION UNIT
EXECUTIVE DIRECTION AND MANAGEMENT
UNITED NATIONS CONFERENCE ON TRADE AND DEVELOPMENT
PALAIS DES NATIONS – CH-1211 GENEVA 10

Chapter I

Technological developments

A. Technological developments in electronic data processing

7. The latest developments in this field are, to put it mildly, overwhelming, and not just for developing countries, but for developed countries as well. This is particularly so for the transport industry, where very rapid progress has been made. Developments in this field can be divided into four areas,

(1) Hardware developments;
(2) The advantages of data standards;
(3) Communications developments; and,
(4) Software developments.

Hardware developments

8. The rapidly increasing power of micro computers, also known as "personal computers" (PCs), coupled with the reduction of their price, has brought this tool within reach of all but the smallest transport companies. It has, for example, been reported that worldwide shipments of PCs during 1988 reached an estimated 21 million units.[6] The introduction of PCs in the transport industry in developed countries is progressing in parallel. In 1987 the French National Railways and British Rail had, for example, 9,000 and 8,000 respectively, with PCs increasing by 2,000 units per year in the United Kingdom.[7] The latest generation of PCs now has a maximum capacity of 1.3 gigabytes (1,300 megabytes), with up to 16 megabytes of memory. The development of new, powerful models using the disk operating system known as "MSDOS", as well as the gradual switch from this disk operating system to the one called "UNIX", which allows direct communications with mainframe computers, has opened the possibility of using local area networks (LANs) connecting up to 250 PCs rather than investing in larger systems such as mini computers.[8]

9. In order for MTOs to be able to compete effectively, they must invest in this type of equipment. Their staff must be trained and their computers must be able to communicate with other computers outside their own organization using agreed standards of communication. However, it cannot be emphasized too strongly that, in the introduction of data processing, functional specifications should first be carefully examined and formulated before hardware is acquired.

The advantages of data standards

10. Most people have today heard of electronic data interchange (EDI). It is generally defined as the computer-to-computer transfer of commercial and administrative data transactions using an agreed standard to structure the data pertaining to the transactions.

11. The most commonly quoted advantages of EDI are:

- EDI saves on clerical costs by avoiding re-entry of data and allows timely and error-free transaction information to be passed from one computer to another;
- EDI improves information management and data exchange within and between organizations, introducing new business strategies such as "just-in-time" (JIT);
- EDI allows quicker and more accurate processing of invoices, speeding up payment and thus

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6 *The PC comes of age at last*, Lloyd's Maritime Information Services Review, London, November 1989, p. 2.

7 Final draft report, Intergovernmental Railway Group Meeting, Sixth Session, ESCAP, 27 November-1 December 1989, para 51.

8 Disk operating systems that are not fully compatible with MSDOS or UNIX will not be able to communicate with the majority of PCs used in the transport industry.

improving cash flows; and,

- EDI facilitates and speeds up border controls and other official interventions, such as Customs clearance of goods and means of transport, and computerized controls to improve the efficiency of the controlling authorities.

As a whole, EDI is a new way of doing business and improving customer service. EDI is becoming an indispensable feature in production and trade, whether domestic or international.

12. EDI offers Governments additional and more up-to-date administrative information about national economic performance and fiscal and commercial balances. Consequently, computerization is increasingly recognized as a useful, practical means of improving revenue collection and control and of identifying main areas of currency and duty loss. For these reasons, investment in computerization tends to focus, initially, on international activities of Customs, exchange control and port operations, extending into adjacent functions of commercial banking and freight forwarding.

13. It has, for example, been estimated in Europe that a saving in the preparation of paperwork of about USD 15 per consignment can be made through the use of EDI. As EDI is being used primarily in developed countries, the cost gap between developed and developing countries, in terms of international trade procedures and documentation, is rapidly increasing. Figures from the European Economic Community (EEC) show that the traditionally accepted costs of documentation under existing requirements represent about 10 per cent of the average value of general cargo consignments. It is claimed that this expense has now been reduced, in trade within the EEC, to about 1.8 per cent.[9] The significance of this reduction should be self-evident; countries that take steps to introduce EDI with a view to reducing documentary expenses will enhance their competitive position.

Communications developments

14. The concepts of EDI are now being introduced in developing countries in a number of specialized communities; for example linking branches of the same company, counterparts in the same industry (e.g. banks, airlines) or small groups of operational partners (e.g. Customs and freight forwarders, Customs and airlines, container operators and sea carriers, etc.). Within each community, which actually constitutes a computerized "island", the interchange partners can agree on a common transmission method and format for the codes to be used, the message structure, the technique for error correction, etc. Only one bilateral "interchange protocol" is needed to lay down the interchange rules. Even in the absence of a common "language", the conversion from in-house data structure to the format required for the interface with the partner's computer does not cause problems if the number of partners remains limited.

15. However, a system is functioning in one place or "island", there may be a need to connect with other places or "islands". It is here that such conversions become more difficult and costly as the number of partners using different standards increases. In the absence of a unique "language", partners are unable to communicate without having recourse to expensive third party services, clearing houses or other value added networks for the multiple conversions required.

16. In due course partners in one country will wish to communicate electronically with their trading partners in another country, but as the flow of data which accompany the goods from the manufacturer's premises to the final buyer's premises passes from one computer to another, from one "computerized island" in one country to another "computerized island" in another country, there is a need for a common universal "language" which will permit end-to-end information transfer irrespective of the type of computer and the type of communication used. Examples of such data links include the Poland/Finland *Polpak*, while in the USSR a system called *Ediflot* is being developed for use by Soviet shipping lines, road hauliers, railways and other members of the distribution industry.

17. Once a decision to establish a system of communications has been reached between two or more parties, it would be convenient for these to come to some kind of "electronic data interchange agreement". One such agreement has been drawn up by the EDI Association of the United Kingdom[10] from where interested organizations may be able to obtain a copy. The agreement is "intended to govern the

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9 *Electronic Data Interchange and Developing Countries*, (IDEA Discussion Paper No. 2), International Data Exchange Association, Brussels, June 1988, p. 7.

10 1st floor, 26 King Street, London SW1Y 6QW, United Kingdom.

rules of conduct and methods of operation between the parties in relation to the interchange of data by teletransmission for the purposes of or associated with the supply of goods and/or services (hereinafter referred to as "Trade") and take account of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission (UNCIT) as adopted by the International Chamber of Commerce."[11]

18. Work in this field within the United Nations system is undertaken under the auspices of the Economic Commission for Europe (ECE). The ECE Working Party No. 4 on Facilitation of International Trade procedures (WP.4) has developed a set of rules for Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT) published as International Standard ISO 9735 and now often referred to as "UN/EDIFACT" to signify their universal nature.

19. UN/EDIFACT is a set of rules which facilitates the electronic interchange of trade data between manufacturers, exporters, wholesalers, distributors, retailers, brokers, forwarders, shippers, consignees, carriers, banks, insurers, port authorities, Customs, etc. It replaces the traditional transmission of paper documents with electronic files sent through uniformly built messages that follow international standards. By using EDIFACT, local EDI projects, such as the one currently being developed at Port Kelang, can grow without fear of technological obsolescence.

20. Although countries members of other United Nations organizations but not members of the ECE may attend WP.4 meetings, very few do. Up until now, the only active non-ECE participants have been Australia, Japan and New Zealand (the United States and Canada are full members of ECE), while there has been occasional participation by delegations from *inter alia*, Kenya, Republic of Korea, Nigeria, Senegal, Singapore and the United Republic of Tanzania. This does not, however, mean that developing countries are completely left out of these very important developments. The UNCTAD Trade Facilitation Programme (FALPRO) has been intimately involved in this work from its inception and has circulated information to national facilitation committees around the world. Nor does it mean that what is being developed by WP.4 is to the detriment of developing countries, since the development work has been undertaken with the sole objective of ensuring faster, cheaper and more reliable transfer of information. But it does mean that the necessary knowledge concerning EDIFACT may not be readily available to the transport industry in most developing countries. Moreover, until now, none of the many general and specialized EDI seminars which have been held over the last two or three years has mounted any worthwhile examination of the implications of EDI for developing countries.[12]

21. This is particularly worrying since rapid moves are now under way for the introduction of EDI between loading ports in developed countries and discharging ports in developing countries. Large vessel-operating MTOs in developed countries have wholeheartedly backed the introduction of EDI and are now introducing the so-called down-loading of entire manifests and bayplans using satellite links in some developing countries. The advantages this brings to the (developed country) MTOs may have a very adverse effect on their developing country competitors.

22. For this reason it would appear that there is an urgent need for much greater involvement by developing countries in this field. In line with the completion of the actual development work of EDIFACT, there is a need for action on several fronts within the developing countries themselves. Firstly, there is an urgent need for dissimination of information concerning EDI in general and EDIFACT in particular, and secondly there is a need to develop EDIFACT messages for local use. Development of such EDIFACT messages is undertaken by Rapporteurs. WP.4 originally appointed three EDIFACT Rapporteurs to co-ordinate development work in three geographical areas (Eastern Europe, Western Europe and North America). Within each geographical area, the Rapporteur is assisted by an advisory and support team. The Rapporteurs have each established a consultative machinery to establish facilities to develop, maintain and implement the EDIFACT rules and related components, to develop, where appropriate, technical assessment facilities and to work out appropriate co-ordination procedures to ensure co-ordination between themselves and the ECE secretariat. It is estimated that about 500 persons are actively involved in this development work at no cost to the United Nations.

23. A fourth Rapporteur function covering the Southern Pacific is being now established, at first to cover only Austrailia and New Zealand. A fifth Rapporteur function comprising one or more Far Eastern countries may also be created. It is in South-East Asia that developing countries and territories have made the greatest strides in the application of EDI. Both Singapore and Hong Kong are well

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11 EDI Association, Standard Interchange Agreement, 1st edition, London, March 1989, preamble. See also ICC publication No. 452.

12 *Ibid.*

ahead, with other countries of the subregion beginning to come to grips with the concept. It would, however, appear that additional Rapporteur functions would be required in the other regions of the world.

24. At its forty-fourth session, in April 1989, ECE adopted its decision L(44) on UN/EDIFACT,[13] by which the Commission invited the other regional commissions to co-operate with ECE and UNCTAD in the promotion and application of UN/EDIFACT.

25. Subsequently, at its 1989 session in Geneva, the Economic and Social Council adopted its resolution 1989/114 which, *inter alia*, invited the regional commissions to formulate, jointly with UNCTAD, a draft proposal for interregional co-operation based on projects detailing technical and resource requirements, in the area of trade facilitation, and in particular the phased application of EDIFACT. In response to this invitation, representatives of the regional commissions and UNCTAD met in Geneva in October 1989 to discuss the implementation of the resolution. It was agreed that there should be a single proposal for an interregional project, incorporating four components (training, network of trade facilitation activities, UN/EDIFACT promotion and implementation, and regional participation in trade facilitation work). This draft proposal will be presented to the Economic and Social Council at its next session in July 1990.

26. The location of both ECE and UNCTAD in Geneva allows very close co-operation between the two organizations. In the field of trade facilitation, such co-operation is a long-standing tradition, and in the field of transport it is becoming still closer, while in the field of EDI it is imperative. As a consequence the UNCTAD has, since 1988, participated actively in the bi-annual WP.4 meetings. Within UNCTAD, the Shipping Division is working closely with FALPRO in order to avoid duplication and to ensure a unified approach to the problems related to the introduction of EDI in developing countries. It is, however, also necessary to satisfy the need for more information concerning the various EDIFACT messages, which are also called United Nations standard messages (UNSMs), that have been or are in the process of being developed for the transport industry, shippers, carriers and ports.

27. The EDIFACT messages, or UNSMs, developed so far include:

(1) International Forwarding and Transport Message (IFTM) framework, which in turn includes the following six messages:

(a) Provisional booking;
(b) Firm booking;
(c) Booking confirmation;
(d) Instruction;
(e) Instruction contract status; and,
(f) Arrival notice;

and important related messages such as:

(2) Commercial invoice;

(3) Purchase order;

(4) Dispatch advice;

(5) Delivery schedule;

(6) Just-in-time message;

(7) Customs declaration;

(8) Documentary credit; and,

(9) Various service messages.

28. The International Maritime Organization (IMO) has developed a series of standard electronic messages covering the clearance of vessels. These are known as EDIMAR and include:

(1) General declaration (IMO FAL Form 1);
(2) Cargo declaration (IMO FAL Form 2);

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[13] E/1989/34; E/ECE/1196.

(3) Ship's stores declaration (IMO FAL Form 3);
(4) Crew's effects declaration (IMO FAL Form 4);
(5) Crew list (IMO FAL Form 5); and,
(6) Passenger list (IMO FAL Form 6).

29. The cargo declaration, eqvivalent to the cargo manifest, will reflect the relevant parts of the IFTM messages pertaining to a vessel's cargo.

30. One very practical effect of EDI is the recently implemented United States Customs requirement for a unique bill-of-lading number. From 1 April 1989, all bills of lading lodged with the United States Customs have been required to carry a unique identifier similar to that in worldwide use for airwaybills for years. The United States bill-of-lading identifier has two elements:

(1) A four-character alphabetic code known as SCAC (standard alpha carrier code); and,

(2) A code up to 12 characters in length which can consist of letters, numbers or both.

Most ocean carriers serving the United States are connected electronically to the United States Customs Service's automated manifest system (AMS), and the unique identifier is an essential aid for document processing between the carriers and the Customs Service.

31. Work is continuing within ECE to create a similar unique identifier for more general use. In due course it may be possible to introduce such a system on a world-wide basis, but it would be important to provide developing countries with an opportunity to let their views be known.

32. In response to these developments, work is now being undertaken by a number of transport organizations to create communications links that use agreed data standards. One developed country non-vessel-operating MTO (NVO-MTO) has, for example, developed a complete communications system that links its main clients, namely shippers, subcontracting carriers and consignees, through its EDI software. The NVO-MTO felt it was particularly important for clients using the JIT technique.

33. In the field of freight forwarding and EDI, two developments relate directly to the work of the UNCTAD secretariat, namely the entry into operation of FIATA's Multimodal Transport Institute, and FIATA's decision, at its 21st World Congress in Sofia, Bulgaria, in 1989, to endorse the creation of a FIATA/SITA (Societé Internationale de Télécommunication Aéronautiques) system of EDI. The EDI system originally created for the airline industry, now links some 370 members all over the world. The new system will allow FIATA members, wherever they are, to access the SITA EDI network on an equal footing with other companies, and at equal cost. Other organizations providing such EDI services include the International Maritime Satellite Organization (INMARSAT).

34. In the field of communication between container operators, the Container EDI Council (CEDIC) has been formed to "build consensus between EDI users from various sectors of the container industry on issues such as message design and data coding and also to assess what new messages ought to be developed."[14] The basis for electronic communications between container owners, carriers and depots is intended to be the ISO container equipment data exchange code (CEDEX) (ISO 9897 standard). CEDEX is a code which is to be used for container inspection, repair and repair authorization communications developed by ISO with inputs from the shipping and leasing industry for incorporation into the UN/EDIFACT system.[15]

35. Not all data access requires two computers to communicate with each other. A few large VO-MTOs (of which at least one is from a developing country) have, for example, created a system which provides shippers and consignees with on-line access to its data base via a touch-tone telephone. The client dials a toll-free number and enters the specific bill-of-lading number, and this prompts the system's automatic (electronic) voice response. The client then presses the appropriate keys on the telephone, which then promts the MTO's computer to supply the desired information such as the exact location of a consignment on its way from shipper to consignee or its Customs clearance status. Alternatively, the client may be able to book space on a future departure. All these facilities are available 24 hours a day, seven days a week and without any involvement of the carrier's staff. Such a system is used not only by shippers and consignees, but also, for example, by the road haulier required to pick up a certain consignment.

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14 *The open container*, Ocean Voice, London, Volume 9, No. 4, p. 14.

15 *Ibid.*

36. But many of these systems, frightening though they may be when seen from some developing countries, are only the start of something much bigger, the use of data with expert systems incorporating artificial intelligence (AI). Large VO-MTOs who might be operating their own container terminal could, for example, use such AI systems to reduce container handling and thus costs. Additional comments on this subject are to be found in paragraph 62 below.

37. In developed countriess the question is already being asked: "If you are not going to be in EDI, are you going to be in business at all?" Similarly, it has been said: "The move to EDI is inevitable, but the key to successful implementation is maximum co-operation between trading partners."[16] There are already companies that will only do business with suppliers or sub-contractors if they can link electronically to the company. One United States railway, for example, told its third party agents in 1987 that they had until 1 January 1988 to establish an electronic interface with the railway for transmission of booking information. Non-EDI communications would no longer be accepted.[17]

38. A further development is that of so-called integrated services digital networks (ISDN) which is a new international service using high-speed digital switching systems. It will support the near instantaneous transmission of data, text, images, videos and voice over normal copper telephone lines. While the system is not expected to become widely utilized in the near future, since it is unlikely to be in full operation before 1993, over the longer term it may have a very considerable impact.

39. The Committee on Shipping may wish to request the secretariat to undertake information activities for the transport industry in developing countries, in close co-operation with FALPRO and ECE and with the other regional commissions.

Software developments

40. The number of software packages specifically aimed at the maritime industry continues to grow. It is today possible to purchase "off-the-shelf" packages on a variety of maritime subjects, from those of a purely technical nature such as engine performance, planned maintenance, temperature control, etc., to accounting packages, container tracing, voyage estimation and documentation production. There is, for example, software that enables carriers to generate and print their own legally acceptable shipping documents using a micro computer and a laser printer. Most importantly, several different forms, satisfying legal requirements for individual countries in the world, can be prepared using the same basic information.[18]

41. In general it can be said that it would be the exception rather than the rule if a ready-made software package was not available for the average transport company. Many such "off-the-shelf" packages can be modified to suit individual needs, and it is, in the opinion of the UNCTAD secretariat, preferable for interested buyers to scrutinize the available packages carefully first before they consider the writing of expensive customized software. The development work for such packages can often cost hundreds of thousands if not millions of dollars and even then a satisfactory end product cannot be guaranteed.

42. One of the few areas where ready-made packages are in short supply is in route studies for liner shipping, particularly when inland transport of goods (containers) is an integral part of the transport. It was for this reason that, several years ago, the UNCTAD secretariat commenced its development work of the MULTISHIP software packages.

43. The Shipping Division has continued its development of this software. In its last report to the Committee on Shipping, the secretariat mentioned the four separate programmes that make up the complete MULTISHIP package. Of these, MULTISHIP Model II has been the most successful. In 1987, MULTISHIP Model II Version 5C was released. A new version is expected to have been released by the time the Committee meets.

44. The new version combines a relatively user-friendly input programme with the calculating programme. It has been expanded to handle a total of 999 cargo flows between a total of 20 ports each with up to three inland terminals. It has been suggested that this programme is one of the most pow-

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16 M. North as quoted in *Ready for EDI*, in Cargo Systems, Volume 16, Number 1, London, January 1989, p. 57.

17 *EDI at the leading 'Edge'*, Cargo Systems, Volume 14, Number 8, London, August 1987, p. 53.

18 Now shippers can defeat the documents bugbear, *Lloyd's List*, London, 10 October 1989, p. 5.

erful tools available on the market for VO-MTOs. Owing to the programme's relative complexity, the Shipping Division has made provision for training of users, to be made available to them at their expense. For further details, interested parties are requested to contact the Shipping Division directly.

45. In response to Committee on Shipping resolution 61 (XIII), paragraph 23, the secretariat has been actively involved in the addition of a transport component to the *A*utomated *SY*stem for *CU*stoms *DA*ta (ASYCUDA) programme. This consists of a software package designed by UNCTAD for use as a national Customs data entry system which will process Customs entries, produce revenue accounts and compile foreign trade data bases. It undertakes Customs book-keeping functions, reconciles statistical and accounting data and prepares trade statistics based on verified data. The development of the transport component has been made possible by a donation by the Italian Government. The transport module will allow the extraction of transport statistics going beyond the port gate. This work commenced in 1989 and should be completed in 1990 or 1991. The secretariat will report to the Committee on this work as it progresses. The standardization of transport statistics based on the ASYCUDA system, which may soon be worldwide, will greatly facilitate planning, not only for the industry but also, just as importantly, for Governments.

46. In parallel with these developments (and in co-operation with ASYCUDA so as to avoid duplication), the Shipping Division has also developed an EDI-based advanced cargo information system (ACIS) under a technical co-operation project providing operational support for the transit transport sector in Africa. Using up-to-date communications links, including micro computers and satellites, ACIS will provide information to create a network linking all the logistics points located between and at the two ends of various transport routes, for example from the loading of cargo in Europe to the delivery thereof in the middle of Africa. At the moment, ACIS is only being introduced in Africa, but it could also be used in other regions of the world.

47. ACIS will provide:

- Advance information on cargo flows. This will allow time to plan the optimum use of transport networks, equipment and standing facilities, which in turn can be used to achieve the best possible transit times for goods;
- A data-base facility for shippers, operators and ancillary services in the transport industry, providing instantaneous details on consignments, including their latest positions; and,
- Historical data which will produce regular transport statistics and performance indicators on modular efficiency and traffic volumes and which will help Governments and institutions with the choice of investment programmes for the transport sector.

These logistics assets, as well as being beneficial to national economies and to the cost-effectiveness of transport resources, will enable local and subregionally based operators to be more competitive in their fields of service. An expanding ACIS network will greatly enhance, and thereby accelerate, the development of inter-African trade.

B. Other technological developments

48. The latest issues of UNCTAD's Review of Maritime Transport contain reference in chapter VI to a number of technological developments such as international physical distribution, the development of inland clearance depots (ICDs), the increasing use of container block train services, and sea-air multimodal transport services.

International physical distribution[19]

49. The transformation of "traditional" multimodal transport operations into total transport chains goes hand in hand with the development of EDI. As large carriers grow larger, use larger ocean vessels and offer more and more sophisticated packages to their customers, such as the above-mentioned 24-hour access to their computers, the development of JIT techniques requires a much closer carrier-customer relationship than was hitherto considered necessary or even desirable. If consignees are to reduce their stock of raw materials and rely on JIT, they must be assured of a very reliable and steady stream of supplies. This in turn requires very close co-ordination between consignees, their shippers and the carriers. Once a smooth system of deliveries has been set up and all the relevant information fed into various computer systems, it obviously becomes very difficult for the shippers/consignees to change carriers.[20] It may of course be possible to do so, but it is not something which can be undertaken lightly or often. Gone are the old days when a shipper shipped with one carrier one day and with another the next. This limits the freedom of shippers, but it also creates a healthier relationship between the shipper and the carrier. In the past it could often be said that the relationship between shippers and carriers was antagonistic, or at best armed neutrality. With the much closer co-operation now required, this relationship becomes one of mutual convenience, and shared advantage. If the carrier wishes to increase his carriage, he must help the shipper become more competitive, and one way is by better performance at competitive cost.

50. Physical distribution is not just for raw materials, but also, and maybe even more, for semi-manufactures or finished products. In the latter case, a physical distribution chain may no longer be warehouse-to-warehouse, but rather factory-to-store. The MTO may co-ordinate the transport of products from a number of sources, and may even operate a reconsolidation centre where consignments from a number of suppliers in different countries are devanned and then reassembled into other containers that go directly to the consignee's individual stores in the importing country. The MTO's services may extend beyond normal shipper/carrier relations, and the MTO may undertake functions that would normally have been carried out by the consignee himself. It has, for example, been reported that one large MTO has concluded a contract with the shipper/consignee to provide the entire logistical support management for a large-scale JIT production scheme.[21]

51. As markets in developed countries continue to become more and more sophisticated, traders will increasingly insist on the utilization of carriers that can offer such physical distribution services. For example, if a shipper is not capable of matching the importer's requirements for timely delivery of products, he is likely to lose the business. The reason for this is that modern distribution requirements and the need for economies of scale may force an importer in a developed country to change supplier rather than to rely on erratic sourcing. It is possible to imagine a situation where a supplier, because of the requirements of a cargo reservation law, does not have a choice of carrier. If the national ocean carrier, which must be used, does not have a sailing that will meet the importer's tight production schedule, the importer may be forced to change to a supplier from another country where the same constraints are not imposed. This may not be true for import cargoes where no JIT system is in force or for export cargoes not having to comply with the JIT concept.

52. The suggestion here is not that cargo reservation laws should be scrapped, but only that a primary goal of MTOs from developing countries should be to make a very major effort to operate with an efficiency that can match that which is offered by MTOs from developed countries.

53. It is suggested that, in developing countriess, this level of sophistication may best be achieved by NVO-MTOs specifically set up with this one purpose in mind. Again, this suggestion is not made in any way to minimize the performance of ocean carriers in developing countries, but only to point out that they may not have the necessary network and expertise to ensure the very close attention to the cargo required at all stages of door-to-door transport. Consequently, if developing countries wish to compete for the top layer of tr le, they may find it necessary to create new NVO-MTOs that may have as their shareholders various unimodal carriers and freight forwarders who have the necessary know-how and who are equipped with the latest computers and communications material, so that they

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19 *Physical distribution* refers to the physical movement of the flows of the goods which a firm endeavours to ship (finished products, parts), transfer (semi-finished products, goods in process) and receive (raw materials, supplies, etc.). It involves the transfer of goods between different modes of transport, possibly across borders, with a systems approach to all activities and functions in the distribution chain in order to reduce and, where possible, eliminate interruptions in the continuous movement of goods and transport equipment from origin to destination. Physical distribution costs include: transport, packing, handling, storing (warehousing), inventory, order processing, material, personel, etc.

20 See also "Information material for shippers to make the most efficient use of multimodal transport", (TD/B/C.4/330).

21 *American Pie*, Fairplay, Coulsdon, United Kingdom, Volume 308, Issue 5536, 23 November 1989, p. 11.

can offer the kind of services required by importers in developed countries. Such new entities should be allowed to "start from scratch" to build up a modern team of transport specialists. If, for one reason or another, this is not possible, the Government might wish to investigate the reasons for this inability and then take appropriate action to rectify the situation.

Inland clearance depots

54. An important element in the physical distribution chain is well-functioning inland clearance depots (ICDs). The secretariats of UNCTAD, ECE and the Customs Co-ordination Council have agreed on the following definition of an ICD:

> *A common-user inland facility, other than a port or an airport, with public authority status, equipped with fixed installations and offering services for handling and temporary storage of any kind of goods (including container) carried under Customs transit by any applicable mode of inland surface transport, placed under Customs control and with Customs and other agencies competent to clear goods for home use, warehousing, temporary admission, re-export, temporaty storage for onward transit and outright export."*

55. It is important to note that the "C" in ICD refers to "clearance", not "container". The reason for this is that using the word "container" would restrict the meaning of an ICD to a facility that only handled containers, whereas most such facilities also stuff and strip containers in their container freight station (CFS) and Customs clear the goods. ICDs should consequently also be able to handle non-containerized cargoes. The above definition allows them to do so. Another name for an ICD is "inland dry port". This name is preferred in a number of countries. The above definition of an ICD covers an inland dry port.

56. The establishment of ICDs, in both developed and developing countries, has eased or eliminated congestion in container terminals in ports. However, for ICDs to function efficiently, a number of outdated regulations, in particular concerning transport between the port(s) and the ICD, may need to be revised as part of a coherent set of facilitation measures.

Block train services

57. Block train services that operate between a port and an ICD have increased considerably in tandem with the penetration of multimodal transport services. Railways can normally compete with road transport over longer distances. The exact cut-off point where rail becomes more economical than road depends on a number of factors. In some countries it may be as little as 200-300 km, while in others, e.g. the United States, the cut-off point may be over 1,000 km away from the terminus. In developing countries the cut-off point tends to be in the lower range.

58. In theory, rail services which operate over distances beyond the cut-off point should be able to compete effectively with road transport as concerns time, but, far too often this is not the case. The reason is often that the country has set its priorities according to criteria other than those an exporter or importer might prefer. In many cases the movement of people and/or food grain may be far more important for the national economy than the movement of a few hundred or even a few thousand containers. The result is that the block train gets shunted off the main line while a passenger train or a train carrying important bulk products passes. In some cases the railways may not even consider the transport of containers as a priority. This might explain why ESCAP's Intergovernmental Railway Group, at its sixth session at the end of 1989, examined plans for the development of railways in developing countries without much consideration of the question of containerization and multimodal transport.[22] Only one document dealt with the transport of containers by rail.[23] This document estimated that the transport of containers by rail would be profitable once the movement reached 30,000 TEUs per annum owing to the number of improvements the national railways would have to carry out before it would be physically feasible to run regular unit train services. The Group did consider the introduction of market-oriented rail services like inland transport of containers, and also took the view

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22 Annotated agenda of the sixth session of the Intergovernmental Railway Group Meeting, agenda item 12, ESCAP (TRANS/IRGM(6)/L.2).

23 "Major findings and recommandations for the development of rail container transport between Malaysia and Thailand", (ESCAP (TRANS/IRGM(6)/7), Intergovernmental Railway Group Meeting, para 80.

that possible developments of rail/sea transport of ISO high-cube containers between countries in the ESCAP region and Europe should be examined.[24] It was noted that the Bangladesh Railways had introduced a modest transport capability of 20′ containers between Chittagong and Dhaka.[25] The Group did not, however, consider containerization one of the major policy issues under its programme of work in the field of railways, and it replaced the work programme item "Development of rail-cum-sea transport" with "Improvement of railway safety."[26] Nevertheless, when determined MTOs (primarily from developed countries) push for and obtain preferential access to railway services, it is often discovered that transit times can be drastically reduced.

59. It is well known that containers are often overloaded. For example, a United States Federal Highway Commission study dated March 1989 has shown that as many as one third of all intermodal containers exceeded the allowed United States highway weight limits by between 2,000 and 10,000 lbs.[27] Transport of overloaded containers by road inflicts heavy damage on roads, particularly in developing countries, leading to costly, and unbudgeted, road repairs. When properly organized, container block-train services are not only able to compete favourably with road transport, but may also be beneficial to the country through the transfer of container traffic from road to rail, even though this may raise questions concerning the split between public and private transport.

Road/rail equipment

60. Equipment that allows the transport by rail of road vehicles has already been in use in both the United States and Europe for some time. The original system was simply to load the road vehicle, less tractor unit, on to a rail flatcar, the so-called "trailer on flat car" (TOFC) or "piggyback" systems in the United States and Europe. Lately, this has been further developed into bi-modal road-rail vehicles suitable for transport on railway tracks and on the road, thus making transhipment with costly specialized equipment unnecessary.

61. One of these systems consists of road trailers equipped with retractable rail-wheel assemblies, another uses standard road trailers placed on detachable two-axle rail bogies when transported on railway tracks. In recent years these techniques have become increasingly popular, especially for medium-distance transport markets in the United States, giving the railways the ability to provide flexible, door-to-door service. One of these systems has been licensed to the New Zealand railways, and several European countries have developed similar road-rail systems for trial in 1989. Similarly, according to a draft ESCAP study entitled "Policy options for the distribution of maximum dimension ISO containers",[28] the Indonesian State Railways are considering the introduction of the Road-Railer system as one possible solution for allowing the transport of high-cube containers.

Terminal equipment

62. The latest in terminal handling equipment are the so-called automated guided vehicles (AGVs). These may be driverless container handlers, unmanned automated stacking cranes and new process control systems that allow all commands to be issued from a central computerized location. Unmanned dockside container cranes are also under consideration. AGVs will monitor their own oil, fuel and mechanical functions and use sensors to prevent collisions. They are reportedly so accurate that they judge distances to within a matter of milimetres, even in wind force nine conditions.[29]

63. Although this type of equipment is still in the prototype stage, it will be field tested at the leading container terminal in Europe from 1993. These field tests are not to be conducted with a single prototype, since the terminal operator has ordered 50 container handlers and 25 stack cranes for the trial. Again the technological development is a massive leap forward. If the trials are successful, terminals and hence their users will derive considerable cost savings. As long as such systems are confined to

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24 "Final Draft Report" (TRANS/IRGM(6)/7), Intergovernmental Railway Group Meeting, para 80.

25 *Ibid.*

26 *Op. cit.*, paragraph 122.

27 *Overloaded containers*, Intermodal Asia, Hong Kong, Autumn 1989, p. 4.

28 It is expected that the final study will be published in 1990.

29 *New Sea-Land terminal at port of Rotterdam to be super automated*, Journal of Commerce, New York, 20 October 1989, pp. 1A & 10A; and *The ac alternative*, Cargo Systems, London, November 1989, p. 65.

ports that do not directly compete with those of developing countries, it would not seem necessary for ports in developing countries to adopt this new technology, but once one port in a developing country introduces the system and that port competes with neighbouring ports, the technological advantage which the more advanced port will gain may have serious repercussions for the less advanced ones.

Automated container identification system

64. At its fifteenth session, in London in June 1989, the International Organization for Standardization (ISO) Technical Committee No. 104 (TC 104) adopted a proposal for the international draft standard on identification of containers by means of automated data processing (DIS 10374). A common standard on such a system had long been considered desirable to ensure that all containers could be identified at any place in the world using the same identification system and generating the same data element.

65. The proposed system consists of a small solid state transponder unit (tag) fixed to the upper side wall of the container and a fixed interrogator which operates on radio waves of high frequency. The interrogator decodes the modulation of the radio wave reflected by the tag on the container and transmits this data to any receiver requesting the information. The tag contains information specifying the alpha-numeric code of the container, its dimensions and the tare weight, i.e. only information related to the container itself and not information related to the cargo. The system is basically intended for terminal use.

66. The main concern in respect of adoption of this system as an international standard was the fact that this device is a patented item and it cannot be produced elsewhere without a licence. Two major United States liner shipping companies have, however, already begun to equip their container fleets, chassis and double-stack railway wagons with this automated data identification system.

67. The Committee may wish to ask the secretariat to keep these technological developments under review and to report thereon from time to time in order to assist developing countries in obtaining the benefits from investment in these new technologies.

Chapter II

The role of freight forwarders in developing countries

A. Development of freight forwarding

68. Worldwide, the future of freight forwarders is a hotly debated issue. The legal status of and the regulations on domestic and international freight forwarding differ widely from country to country. Apart from auxiliary services for transport such as customs broking, documentation and packaging, freight forwarders participate, in many countries, in unimodal, segmented and multimodal transport at the international and domestic levels, but with different levels of responsibilities, their legal status varying from country to country. In some countries their status depends on the mode of transport as well as on the scope of the transport services (domestic or international) they provide,[30] while in others national legislation and regulation apply irrespective of the mode of transport or the scope of their services.

69. Moreover, in many countries, including some developed ones, international freight forwarders are neither defined nor regulated and they suffer from a lack of identity in their promotional and regulatory framework. In the absense of internationally recognized definitions, the use of expressions such as "freight forwarders" or "international freight forwarders" is consequently a frequent cause of misunderstanding and confusion. The use of the expression "NVOCC" further increased the confusion, since it means "non-vessel operating *common carrier*" under the definition of the United States Shipping Act of 1984, whereas many freight forwarders in other countries call themselves NVOCCs despite the fact that they disclaim liability as common carrier in their standard trading conditions.

70. In Europe, a few large freight forwarders developed in areas remote from the sea, because shippers were in need of freight forwarding services to overcome complicated procedures for inland and ocean transport, as well as for transhipment arrangements and Customs clearance. Regions closer to the sea were not in the same need of extensive forwarding services. Before the development of containerization in the late 1960s and international multimodal transport in the mid-1970s, European freight forwarders' activities tended to be confined to their own region, and their services were limited to the following fields and functions:

(1) Port freight forwarders: acting on behalf of shippers and consignees in booking cargo space and receiving and obtaining Customs clearance for imported goods;
(2) Border Customs brokers: handling Customs formalities at European border crossings;
(3) Rail forwarders: acting as intermediaries between the state railways of Europe and shippers; and,
(4) River transport brokers: specialists in agencies for river barges and shippers.

71. These services required neither financial strength nor substantial investment in facilities. Today, however, should freight forwarders wish to participate in containerization and international multimodal transport or respond to the shippers' increasingly sophisticated requirements for logistics management, they must have the financial means of undertaking door-to-door responsibility as NVO-MTOs. They would also be obliged to invest substantial capital in computers and communication equipment in order to build up international service networks and on-line communication systems. As a result, the big forwarders will grow bigger, whereas smaller freight forwarders will be forced to specialize in one of the traditional functions of freight forwarding or to drop out of the industry completely. Consequently, shippers will have a smaller range of competing forwarders with whom to place their business, although each freight forwarder may be offering a widening choice of services, including some that may be tailor-made to clients' own specifications.

72. The freight forwarding industry is, however, very flexible and innovative in pursuing business opportunities as they arise. A good example may be traditional freight forwarders who have extended their scope of business beyond the old procedural functions for import and export. Some large trucking companies and to forwarding departments of some ships' agents or warehousing companies have also

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30 Under the United States Shipping Act of 1984, no company acting as "ocean freight forwarder" is allowed to issue ocean bills of lading or multimodal transport document. A "non-vessel-operating common carrier" can, on the other hand, issue such documents.

entered this field. In addition to extensions of activities by existing companies, new ones have also been established by various interests, such as containership operators, railways, trading houses or manufacturers. These not only handle cargo for their respective parent companies, but also provide services for third-party shippers.

73. The diversification of services in the industry and demands from shippers for door-to-door multimodal transport services under fixed price contracts and single responsibility are thus changing the freight forwarder's relationship with his clients. Freight forwarders must now contract as a principal, assuming total responsibility and liability for the performance of the service they offer.

74. If freight forwarders wish to take on such increased responsibilities, they need a new name. NVO-MTO is such a new name. It is important to pay attention to the distinction between a freight forwarder and an NVO-MTO. A freight forwarder acts as an agent, an NVO-MTO as a principal on equal footing with major vessel-operating MTOs (VO-MTOs). It is in the interest of freight forwarders themselves to pay attention to this difference in terminology and to grasp the enhanced status they can derive therefrom.

75. In many developing countries, freight forwarders are facing similar problems related to lack of recognition, accreditation, distribution capabilities and training.

76. *Lack of recognition:* Shippers generally do not recognize the industry's capabilities. This may be owing to their lack of awareness of what freight forwarders can do, their lack of confidence in freight forwarders' agency networks, and the minimal, if any, entry requirements for joining the profession. This lack of recognition might also result from the fact that some forwarding companies are created primarily to support parent shippers and that the freight forwarding industry's marketing practices do not explicitly describe services being offered.

77. *Accreditation:* In many countries, there is no professional or financial barrier to entry into the forwarding business, and this encourages "fly-by-night" or "attaché-case" operators. This situation results in a wide difference in the service capabilities offered by freight forwarders and by companies extending their original services into forwarding, as agents, principals or NVOCCs, limiting the ability of an inexperienced shipper to select a forwarder intelligently. Some form of accreditation with minimum qualifications for forwarders is consequently recognized as desirable both for the industry and for shippers.

78. *Distribution capabilities:* There is a wide range of distribution capabilities among freight forwarders. Some are multinational companies with long-established networks of offices around the world. Others maintain their networks through agency agreements which vary from formal written contracts or joint ventures with forwarders residing in other countries to casual requests for services from a forwarder listed in a directory. Such agency arrangements might be counter-productive for local forwarders, since, once sufficient volumes of traffic have developed, the foreign company will frequently establish a branch office, thereby depriving the local freight forwarder of his business or at best relegating him to the status of a mere sub-contractor. In some countries, national laws have consequently been introduced to control this practice through mandatory requirements that shipments be handled by companies owned by their citizens. This type of law must be approached with caution, since they may result in reciprocal action being taken by other countries. This would in turn deny access for the freight forwarder from the restricting country to the other country.

79. *Training:* There are severe limitations on the professional development of freight forwarders in many countries. In the absence of formally recognized education or apprenticeship programmes, on-the-job training is the main alternative for preparing technicians and managers.

80. The UNCTAD technical co-operation and training activities in the field of multimodal transport have made the secretariat aware of the fact that multimodal transport is not operational in developing countries on anywhere near the scale it ought to be. In some rare cases, internationally established freight forwarders are offering combined transport operations, but, generally speaking, local freight forwarders are simply relegated to the role of agents for the shippers. Expanding multimodal transport operations in developing countries requires the wide dissemination of information on these issues, in particular with regard to the technological changes affecting international trade and transport. In addition, constant support for the freight forwarders' efforts to strengthen their national and subregional structures appears to be necessary.

B. Co-operation with the regional commissions in the field of freight forwarding

81. The secretariat has co-operated with the Economic and Social Commission for Asia and the Pacific (ESCAP) in the elaboration of a workshop for freight forwarders. The basic workshop material had been prepared by UNCTAD as part of a technical co-operation programme. This material was first reviewed and commented on by FIATA and subseqently passed on to ESCAP, which had the necessary financial resources to carry out the required improvements. The revised material was then returned to UNCTAD for comments. After having also received comments from the freight forwarding industry, ESCAP will carry out final corrections, after which it is hoped that the workshop can become a valuable tool in the training of freight forwarders in developing countries.

82. There has been similar co-operation with the Economic Commission for Africa (ECA) in the context of an ongoing UNDP-financed project on human resources and institutional development in freight forwarding for sub-Saharan Africa. The objective of this project is to determine those internal and external factors which assist or constrain the human resources performance and manpower development of ports, freight forwarding and multimodal transport organizations in Africa.

83. In the Economic Commission for Latin America and the Caribbean (ECLAC) region, UNCTAD has participated in activities aimed at the improvement of freight forwarding in Latin America. One presentation of the concept of multimodal transport was made in the context of a World Bank/ECLAC seminar on containerization on the East Coast of Latin America. Two other presentations were made at the annual meetings of the Latin American Association of Freight Forwarders (ALACAT). As a side-product of these activities, UNCTAD is collaborating with the regional organization the Commission of the Cartagena Agreement (JUNAC) in a UNDP-financed project aimed at promoting multimodal transport and containerization in the countries of the Andean Group (Bolivia, Colombia, Ecuador, Peru and Venezuela).

Chapter III

Elaboration of a standard form and model provisions for MT documents based on the Hague Rules and the Hague-Visby Rules

84. In accordance with resolution 60 (XII), section I, paragraph 2, the secretariat invited interested organizations from both developed and developing countries to participate in an informal meeting to discuss the possibility of elaborating a standard form and model provisions for MT documents based on the Hague Rules and the Hague-Visby Rules. A total of 32 organizations representing shippers, carriers, and intergovernmental and non-governmental bodies from all over the world were invited. Of these, 18 replied and 12 participated.

85. In preparation for the meeting, the secretariat circulated a table comparing various "standard" combined or MT documents and a draft agenda. At the meeting, on 12 October 1989, the secretariat presented, as a working document, a set of "Possible clauses to be incorporated in a model MT document". Although there was some difference of opinion between shippers and carriers (but not between North and South), there was general agreement regarding the usefulness of the meeting and its aims. There was also agreement that it might be useful to develop a set of joint UNCTAD/ICC Uniform Rules for MT documents.

86. At a subsequent meeting of the ICC Sea Transport Committee, at which the UNCTAD secretariat was represented, that Committee agreed to this suggestion. It was further agreed that it would be convenient if "the competent commercial parties" could be represented by the ICC, which has a worldwide membership.

87. Consequently, UNCTAD called a third meeting, which the ICC delegation included representatives from carriers, freight forwarders, shippers, and the ICC secretariat. The meeting was chaired by a representative of the Comité Maritime International (CMI).

88. At this meeting, it was agreed first of all to develop, as a replacement for the existing ICC Uniform Rules for Combined Transport, new voluntary UNCTAD/ICC Uniform Rules for a Multimodal Transport Document. It was also agreed that the rules would come first and that only later could standard MT document back clauses be drafted.

89. The meeting also decided to establish a small drafting group to consider the following list of subjects:

(1) Applicability;
(2) Definitions;
(3) Documents (negotiable/non-negotiable/electronic);
(4) Responsibility/liability/delay;
(5) Dangerous cargo/shippers' responsibility/liability;
(6) Loss of right to limit liability;
(7) Vicarious liability questions;
(8) Time bar and notice of claims;
(9) Freight and charges;
(10) Liens;
(11) Optional stowage; and,
(12) Routing.

90. The drafting group held its first meeting in Zurich in December 1989. A second meeting took place in early January 1990, with a full ICC/UNCTAD meeting scheduled for February 1990. It is hoped that the final draft rules will be available for the fourteenth session of the Committee on Shipping, at which time an oral report will be made on the progress achieved. It is also hoped that it will be possible for the Committee to take note of the new draft Rules, which in due course, i.e. after approval by the various national committees of the ICC, will be issued to replace the existing Rules.

91. From this it can be deduced that it has not been possible for the UNCTAD secretariat to complete its work on the document itself in time for the fourteenth session. It was, however, felt important to reach consensus on the rules before further work on the actual document was undertaken. It is hoped that a final draft text of a model MT document based on these new rules can be submitted to

the fifteenth session of the Committee on Shipping for its consideration.

92. At its meeting in November 1989, the ICC Sea Transport Committee decided that it would be beneficial for the close working relationship which is rapidly developing between the UNCTAD secretariat and that Committee, for the UNCTAD secretariat to attend its meetings as an observer on a regular basis like other IGOs and NGOs.

93. The UNCTAD secretariat would like to take this opportunity to thank ICC and the various commercial bodies participating under its banner for the excellent co-operation it has received in this important work.

Chapter IV

Reference library for multimodal container tariff rules

94. The Group of Experts to Develop and Recommend Model Rules for Multimodal Container Tariffs decided that it would be desirable to have a reference library containing different types of existing tariffs which potential users might consult. The Committee on Shipping subsequently requested the secretariat to start operating a reference library and report thereon at the Committee's fifteenth session.

95. Though the creation of the tariff reference library was broadly publicized and a special note to this effect was sent by the Secretary-General of UNCTAD to the States members of UNCTAD requesting co-operation in the maintenance and updating of the tariff reference library, the response has been poor. Apart from a few vague requests for "all the tariffs", the last of which was dated March 1988 and to which the secretariat replied that requests had to be more specific and thereafter received no further correspondance on the subject, the secretariat has not received any significant support in its endeavours in this field. The library continues to be open to potential users and contributors, but the project to test the possibilities of creating EDP-based facility for the library has been suspended owing to the obvious lack of interest in the industry. The Committee on Shipping may wish to accept this interim report on the functioning of the reference library as an indication of the lack of commercial interest in the library. Unless advised to the contrary by the Committee on Shipping, the secretariat will cease maintaining the library as of the end of June 1990.

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Committee on Shipping

REVIEW OF DEVELOPMENTS IN STANDARDIZATION OF CONTAINERS AND RELATED ACTIVITIES

Report by the UNCTAD secretariat

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Introduction

(i). The programme of work in the field of multimodal transport and containerization which the Committee on Shipping adopted at its ninth session stated that:

> "with its interest in ensuring optimum use of investment in ships and containers and with the object of promoting the efficiency of transport operations at lowest possible cost, the Committee will keep activities in the field of the international standardization of containers and related equipment under constant review. The UNCTAD secretariat should, therefore, in co-operation with IMO and the International Organization for Standardization, report to the Committee from time to time on the economic implications of these developments".[1]

(ii). This subject was introduced as a result of the concern of the world transport community to maintain a high degree of stability of international container standards and to ensure their universal application in the interests of safeguarding intensive investments in equipment and as a result of the concern expressed by developing countries at the fact that international container standards had been elaborated with very limited participation on their part so that they had had little or no influence on the subject.

(iii). Reports on developments in the standardization of containers and related equipment were presented by the secretariat to the Committee on Shipping at its tenth, eleventh, twelfth, and thirteenth sessions.[2] At the thirteenth session the Committee on Shipping instructed the secretariat,

> "closely to monitor developments in ISO meetings related to developments in container dimensions and ratings, especially in Technical Committee 104, and to report at regular intervals to States members of UNCTAD and to the Committee on Shipping", and encouraged all States members of UNCTAD to participate actively in ISO's work on container standards".[3]

(iv). In compliance with this request, the UNCTAD secretariat presented the position of developing countries on this matter at the International Organization for Standardization (ISO) general assembly in September 1988 and at the last plenary meeting of the ISO Technical Committee 104 (TC 104) in June 1989, emphasizing that any final decision in relation to proposals for changing the current ISO standard at present would be premature.

(v). The present report contains a review of the situation in the field of container standards development for consideration at the fourteenth session of the Committee on Shipping.

(vi). The secretariat's report presented at the twelfth session of the Committee on Shipping on the problem of developments in standardization of containers and related activities (TD/B/C.4/302, para. 83) in relation to a phenomenon of so-called dimensional deregulation and proliferation of containers with dimensions going beyond those prescribed by ISO standards, mentioned the need for reliable statistics in relation to the composition of the world container fleet.

(vii). In response thereto, the Committee on Shipping in its resolution 60 (XII) requested the secretariat,

> "to prepare a report concerning the feasibility of introducing a system for compiling reliable statistics in relation to the composition of the world container fleet, and to submit this to the Committee on Shipping".[4]

The conclusions of the secretariat's investigation of this problem are also incorporated in this report.

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1 Report of the Committee on Shipping on its ninth session, (TD/B/C.4/216).

2 (TD/B/C.4/235), (TD/B/C.4/270) (TD/B/C.4/302, paras. 80-102) (TD/B/C.4/312, paras. 16-30).

3 Report of the Committee on Shipping on its thirteenth session, (TD/B/C.4(XIII)/Misc.2), Annex I.

4 Report of the Committee on Shipping on its twelfth session, (TD/B/C.4(XII)/Misc. 3), Annex I.

Summary and conclusions

1. Although non-ISO standards containers have existed since the beginning of containerization, and although some of these continue to circulate worldwide while others move only in selected trades, standardization of equipment, especially of the dimensions and ratings of containers, has been a major element in the development of multimodal transport. The essential parameters of the present ISO 668 standard have not changed since its introduction in 1964, and this has provided favourable conditions for a remarkable growth of containerization and multimodal transport expansion. The use of containers with relatively few different sizes and fixed dimensions has allowed the construction and economic use of expensive equipment, such as fully cellular container ships, transtainers, dedicated container trains and road vehicles, with the confidence that such investments would be subject only to the uncertainties of international trade and not to the proliferation of different container sizes.

2. The censuses of the world container fleet carried out periodically by an industry magazine have given a fairly distinct picture concerning the distribution of the container population by dimensional parameters, cladding material, ownership and other features. In the present report, the evolution of the container population has been analysed on the basis of the censuses made since 1978. The main conclusion of this analysis is that a high degree of homogenity of the world dry cargo container population has been achieved and that this has increased from one census to another. The wide voluntary acceptance of the ISO 668 standard reflects the fair balance between the differing technical, safety, operational and economic requirements of marine, rail and road transport interests which was achieved in its elaboration and adoption.

3. The evolution of shippers' requirements and the changes in regulations restricting the dimensions of transport means, together with technical progress and the use by transport operators of economies of scale, have, however, introduced containers with dimensions going beyond present ISO standards. The newly introduced non-ISO dimension containers are currently used primarily on specific trade routes although their area of circulation appears to be spreading.

4. However, the majority of countries cannot at present handle these new (larger) sizes of containers. Experience has proved that the movement of high-cube and oversized containers by inland transport systems in Europe, in most cases, is considered as "exceptional transport" with all the commercial consequences connected therewith (conditions, tariffs, etc.). In many developing countries their transport is often impossible. Furthermore, current container handling equipment is based on existing ISO standards, and the new sizes of containers cannot automatically be handled by existing equipment.

5. Because of operational and economic constraints in both developed and developing countries, and taking into account their modest share of the world container population, it would seem premature to incorporate these new (larger) containers in the ISO standards.

6. The Committee on Shipping may wish to request the UNCTAD secretariat to undertake a comprehensive study of the new-generation containers, taking into account the interests of all concerned parties. Such a study should include an economic, social and environmental analysis and an evaluation of possible costs or benefits which might result from their introduction.

7. Monitoring the development of the situation in respect of new additions to the world container fleet and trends in this area is important. Data on the distribution of containers entering the industry in respect of their dimensional characteristics permits the evaluation of the rate of proliferation of each dimensional category of containers and may be used to solve the question of the desirability of introducing changes in existing container standards. In this respect, sample surveys similar to that conducted by the UNCTAD secretariat would be useful in providing the industry with an indication of the rate of introduction of containers with different dimensional parameters and trends in this area. It would, however, be helpful if the container manufacturing industry were more responsive to such surveys. The Committee may wish to request such sample surveys to be carried out by UNCTAD from time to time or at regular intervals.

8. In view of a resolution adopted by TC 104 at its last plenary session requesting of "the Economic and Social Council and its subordinate bodies such as the regional economic commissions, UNCTAD and all other relevent non-governemental organizations, a full and world-wide economic evaluation for the requirements of future containers", the Committee on Shipping may wish to request the secretariat to take part in further studies in consultation with all interested parties so that the position of developing countries can be taken properly into account in the solution of this problem.

SURVEY OF THE QUALITY AND USEFULNESS OF UNCTAD PUBLICATIONS AND OF THEIR END-USERS

The UNCTAD secretariat, in the context of its programme evaluation activities and in response to intergovernmental requests, is seeking the opinions of end-users in order to have basic data for assessing the quality, usefulness and effectiveness of *inter alia* its research reports and publications. As the success of such an exercise is critically dependent on an adequate rate of response we should appreciate it if you would take time to answer the questions below and submit any other comments that you may have concerning the current document.

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By participating in an UN/UNCTAD intergovernmental meeting	( )	UNCTAD initiative	( )
		Other (please specify)	. . . . .
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Legislation	( )	Other (please specify)	. . . . .
Background information	( )	. . . . .	

5. **How do you rate the document as regards:**

Its usefulness to your work *(tick one box)*

Extremely useful ( ); Very useful ( ); Useful ( ); Marginally useful ( ); Not at all ( ).

Its quality, in terms of the following aspects *(tick one box in each case)*:

	Outstanding	*Excellent*	*Good*	*Adequate*	*Poor*
Presentation and readability	( )	( )	( )	( )	( )
Originality of ideas	( )	( )	( )	( )	( )
Wealth of information	( )	( )	( )	( )	( )
Up-to-date information	( )	( )	( )	( )	( )
Technical accuracy	( )	( )	( )	( )	( )
Quality of analysis, including objectivity	( )	( )	( )	( )	( )
Validity of conclusions	( )	( )	( )	( )	( )
Clarity of recommendations	( )	( )	( )	( )	( )
Comprehensiveness of coverage	( )	( )	( )	( )	( )

6. **Other observations** *(if any)* . . . . . .

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Finally, we would appreciate it if you could provide the following information about yourself:

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Chapter I

Concept for the international standardization of freight containers

9. From its very beginning, containerization has been faced with the problem of interchangeability, compatibility and intermodality, to ensure that containers corresponded to certain broadly accepted standards regarding dimensions, ratings, specifications, testing, corner fittings, coding identification and marking, handling and securing. The leading role in securing such standardization was assumed by ISO TC 104, which initiated its activities in 1960. The formal scope of the work of TC 104 "Freight Containers" is the "standardization of freight containers, having an external volume of one cubic meter (35.3 cubic feet) and greater, as regards terminology, classification, dimensions, specifications, test methods and marking". As a consequence, the world transport community has experienced a fairly orderly development of the container transportation industry. This was achieved from the outset, because agreement had been reached within ISO on the basic features of containerization.

10. In developing the concept of international standardization of containers, ISO took the following criteria into account:

(1) The dimensional configuration of the containers to be transported should be compatible with the cargo to be handled and its capacity should be attractive to the shipper and the carrier;

(2) The container design should be readily acceptable to the rail, ocean and road carrier groups and facilitate their ability to handle, secure and transport the unit in an efficient and economical manner;

(3) The container should be designed to conform to the safety rules and regulations of each of the transport modes to which it was exposed and yet be simple enough to accomplish its assigned purpose without imposing unnecessary cost or causing operational disadvantages;

(4) The dimensional and load limits of the standard container should permit maximum penetration of the hinterlands of the continent within which it would circulate and therefore must take into account the restrictive limits existing in terms of the capabilities of one, or a combination of carrier modes to do so;

(5) The container standards should provide for a series of modularly related sizes and capacities to accommodate a variety of transport and distribution operations in the movement of goods to and from the major trading nations as well as in countries with limited facilities and domestic transport possibilities; and,

(6) The standard container should be capable of providing a common-denominator approach between differing economically independent transport systems in different countries so as to ensure minimum disruption to established distribution patterns.

11. Consequently, it must be stressed that the ISO international container standards are of an operational and not a constructional nature. They do not prescribe the nature, thickness or form of material used for the construction of containers, leaving these to the producer's option. But they do specify the operational requirements to which the container has to respond, such as external dimensions, rating, static and dynamic forces on the containers.

12. The present ISO 668 standard (table 1) has not changed essentially since its introduction in 1964, and this has fostered growth of containerization and multimodal transport. The only significant changes incorporated into the standard have been the introduction of 8'6" high containers and the increase of a maximum gross mass of 20' containers up to 24 tonnes. Although these were important modifications, they did not affect the intermodality and interchangeability of containers. This was in line with the declared ISO policy of maintaining a high degree of stability of container standards.

Table 1

Series I Containers (ISO 668 standard)

Designation	Year introduced	Length	Width	Height	Rating
1AA	1969	40′	8′	8′06″	30,480 kg
1A	1964	40′	8′	8′00″	30,480 kg
1AX	1979	40′	8′	< 8′00″	30,480 kg
1BB	1974	30′	8′	8′06″	25,400 kg
1B	1964	30′	8′	8′00″	25,400 kg
1BX	1979	30′	8′	< 8′00″	25,400 kg
ICC	1974	20′	8′	8′06″	24,000 kg (from 1985)
IC	1964	20′	8′	8′00″	24,000 kg (from 1985)
ICX	1979	20′	8′	< 8′00″	24,000 kg (from 1985)
ID	1964	10′	8′	8′00″	10,160 kg
IDX	1979	10′	8′	< 8′00″	10,160 kg

Source: ISO 668 standard.

13. Though not ideal, the ISO 668 standard takes into account the requirements of rail, marine and road transport modes and main national transport regulations. Within the basic framework of the Series I containers, including flatracks and open-sided ones, the individual types have been standardized for the carriage of dry, refrigerated, liquid and bulk cargoes, to suit the wide variety of cargoes moving in international trade.

14. Aware of the importance of the stability in the field of international container standards in relation to dimensions and ratings, the Council of ISO adopted a resolution in 1978 requesting the widest possible consultations over proposals for revisions to the ISO 668 standard which would affect compatibility, intermodality and modularity of containers. According to the resolution, such proposals must be justified by a comprehensive report and evaluation showing that these changes are in the common interest. According to a resolution adopted at the same time by TC 104, any revision of the standards for container dimensions and ratings should preferably be made only at the end of each five-year period after its previous revision.

Evolution in container dimensions

15. Non-ISO containers have always existed and still circulate in a few trades. This is the case, for example, with the Sea-Land Corporation's non-ISO 35′ containers. Their numbers, however, have decreased - from 63,277 in 1980 to 36,482 in 1986.

16. Censuses of the world container population carried out at various intervals[5] have shown that increased standardization in terms of length and height of the world container population has been achieved from 1978 to 1986. The share of ISO containers with a length of 20′ and 40′ and a height of 8′06″ has steadily increased over the years (see table 2). As a result, the percentage of 8′ high containers has declined. More detailed data on evaluation of the distribution of the world container population by dimension of containers are considered in chapter II.

5 Containerization International, London, 1978 No. 11, 1980 No 8, 1983 No. 8, 1989 No. 9.

Table 2

Share of 20′ and 40′ long 8′06″ high containers of the world population, in real units

	1978	1980	1983	1986
Total number of containers	1,307,497	1,917,752	2,991,998	3,623,092
8′06″x20′ and 40′ units	880,631	1,407,315	2,542,949	3,198,420
per cent of total	67.3	73.4	84.6	88.2

Source: Computed from the censuses carried out by Containerization International.

17. However, the evolution of shippers' requirements and the changes in regulations restricting the dimensions of transport means, together with technical progress and the increasing use of economies of scale, have brought about the introduction of containers with dimensions going beyond the ISO standards.

18. De-regulation of road transport in the United States and the introduction of high-cube and super high-cube containers[6] - at first in domestic service, later in the trans-Pacific and the trans-Atlantic trades - have created a new situation. While the censuses of 1978, 1980 and 1983 showed the share of 9′ and 9′06″ high containers at about 1.8 per cent, the 1986 census showed that their share had increased to 3.1 per cent. Taking into account recent orders by some major operators, as well as indications concerning the additions to the world container population in general, it is anticipated that the next census will show an even greater proportion of high-cube containers in the world container population.

19. It was noted, for example,[7] that about 10 per cent of the 1988 container production in Taiwan Province of China and in the Republic of Korea was high-cube containers. This amounted to about 7 per cent or 370,000 twenty-foot equivalent units (TEUs) of the world's container population. In 1988 the number of 45′ containers reached some 30,000 and some containerships have had their cells adapted to carry such containers. This all indicates a greater, albeit reluctant, acceptance of this non-ISO length.

20. The proliferation of high-cube containers was recognized in the new ISO standard 668 by incorporating in it the following warning:

> "Recognizing that there will always be a need for special containers for particular traffic, attention is drawn to the fact that a number of non-ISO containers exist which have similar length and width dimensions to ISO series 1 containers but have ratings and/or heights in excess of those defined in table 2. They are not intermodal worldwide and their operation may require special arrangements. Type non-ISO containers requiring such arrangements are: a) those having similar characteristics to the IAA ISO series 1 container but having an external height of 2,9 m (9 ft 6 in); b) those having similar dimensional characteristics to the ICC ISO series 1 container but being rated to 30,480 kg (67,200 lbs.)".

21. The trend towards the use of larger and heavier containers has been reflected in the activity of TC 104. First of all, at its plenary session in 1987 in Ottawa, Canada, a proposal to consider the adoption with the ISO series 1 standards of 2.9 m (9′06″) high containers and the increase to 30,480 kg in the maximum gross mass for series 1B (30′) and 1C (20′) type containers was adopted. The task of incorporating the increased dimensions and ratings of ISO series 1 standards was assigned to Sub-Committee 1 of TC 104. At the recent plenary session of TC 104, held in London in June 1989 it was decided to adopt the height of 9,06″ as a standard for series 1 30′ and 40′ containers, but there was no agreement on proposals to adopt this height as a standard for 20′ containers or to upgrade the maximum gross mass for 20′ long containers to 30,480 kg.

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6 Containers having a height of 9′ or more are called "high cube" containers. Most of them are 9′06″ high and 40′ long. Their width is 8′, i.e., the same as that of ISO series 1 containers. Containers 9′06″ high and 45′ long were introduced in the United States already in 1982. These containers, as well as containers used domestically in the United States having a width of 8′6″ and lengths of 45′, 48′ or 53′, are known in the industry as "super-high cube" or "wide bodied" containers.

7 At a Cargo Systems Conference held at the end of 1988.

22. The decision to include the height of 9'06" was adopted with a rather close vote (12 votes in favour, 8 against and 2 abstentions for 40' containers and 11 in favour, 9 against and 2 abstentions for 30' containers). The secretariat of Sub-Committee 1 of TC 104 was requested to incorporate the amendmends in the Draft International Standard (DIS) 668 by 1 October 1989. According to the ISO procedure, this DIS 668 will be circulated by the ISO central secretariat to all member bodies for approval within six months. To be accepted as a new ISO standard a 75 per cent majority vote of member bodies is required. Thus, member bodies have the oportunity of expressing their concern or objections to the proposals at the voting stage.

23. In 1987, Working Group Four (WG.4) "Future Containers" (which was established by TC 104 in 1982) was assigned the task of developing a standard for a new series of containers. According to the mandate given to the Group, this standard should:

(1) Take full advantage of road width limits of 2.6 m (8'06");
(2) Permit a height of up to 2.9 m (9'06"); and,
(3) Allow the upper limit and intermediate sizes of container lengths to be optimized.

24. The national experts in WG.4 were well aware of the fact that in North America some transport companies will continue to develop and to use containers larger than those of ISO standards; and that if the standardization work on such units was begun early and progressed quickly, a proliferation of non-standard sizes could possibly be avoided. But subsequent meetings of WG.4 proved the complexity of the problem and the difficulty of finding a universally acceptable solution.

25. At the most recent meeting of TC 104, the question of the future generation containers with reference to the work of WG.4 was again extensively discussed. It was noted that no agreement was achieved within WG.4 concerning the length and width of such containers. Moreover, it was agreed that the work in progress within WG.4 should be limited to the exploratory stage until a more thorough cost/benefit analysis of the consequences of future generation containers was made. As a result of the discussions the following resolution in respect of the work on future generation containers was adopted:

(1) WG.4 shall develop guidelines on technical matters relating to future containers;
(2) WG.4 shall study dimensions and ratings, corner fittings, base structure and tunnel requirements;
(3) In its review of container widths, WG.4 will continue to consider 2.6 m as well as 2.5 m widths; and
(4) A full and world-wide economic evaluation for the requirements of future containers will be requested of the Economic and Social Council and its subordinate bodies such as the regional economic commissions, UNCTAD and all relevant non-governmental organizations

The Committee on Shipping may endorse this request of TC 104 by asking the secretariat to take part in the studies proposed so that the position of developing countries could be taken into account when evaluating requirements of future containers.

Developments in the United States of America

26. As a result, in particular, of the adoption in 1982 of the Surface Transportation Assistance Act, which permitted a container length of 48' and a width of 8'06" (2.6 metres), United States transport companies involved in both the domestic and the international intermodal transport industry, are gradually moving towards increased use of larger containers.

27. Consequently, the United States Technical Advisory Group for Standardization of Freight Containers has been considering a new standard for "Requirements for Domestic Dry Van Cargo Containers" with the following parameters:

Width:	2.60 m
Height:	2.90 m
Lengths:	40'; 45'; 48'; and 53'
Maximum gross mass	67,000 pounds (30,481 kg).

The arrangement of the handling apertures of these containers corresponds to the arrangements of corner fittings of 40' ISO containers. Certain producers are already manufacturing containers consistent with these (domestic United States) draft standards.

28. However, according to the United States Maritime Administration data, ISO standard 20' and 40' containers continue to be the most widely used size. In 1989 their share in the total number of containers in that country was more than 97 per cent and the share of 45' and 48' containers less than 1.5 per cent.

Developments in Europe

29. The ISO container standards concept included a high racking strength for the container and a high stacking capability for transportation on container ships. In pure inland transport the strength criteria can be considerably lower. The International Union of Railways has therefore designed a so-called "T-container" (T = terrestre) with the same dimensions as an ISO 20' container, but with less strength and with side doors allowing unloading on rail sidings.

30. Subsequently, the Federal German Railways (DB) built a container with an outer width of 2,500 mm and an inner width allowing the loading of two 1,200 mm-wide pallets side by side. Standardization and wide use of such containers together with swap bodies of the same width[8] was helpful for the European inland transport, because a growing proportion of shipments is palletized using pallets of 800 x 1,200 mm or 1,000 x 1,200 mm. The length of these containers has been standardized at 12.20 m and 6.05 m. Today these container types form the basis of the present European container pool managed by INTERCONTAINER, the container operator set up by the European railways.

31. Another development has been the appearance of 40' dry cargo containers responding to all the ISO standard requirements, but having a width of 2.5 m. This has permitted the loading of 24 pallets (1200 x 1000 m) instead of 21 in the usual standard type container. The original design of the corner posts, the endwall and the door permitted this container design to be compatible with the 8' cell-guide system on board containerships. Several short-sea European operators have introduced the 2.5 m width vessel-cells-compatible containers in their services.

32. The high-cube and super-high-cube containers have also been introduced to the European transport scene by several major operators and their infusion into the European inland transport system, with their often tight road and railway loading-gauge limitations, sometimes poses major problems. To ensure transportation of such containers special rolling stock or costly adaptation of the loading gauge has to be provided.

33. In a resolution adopted in April 1989, the Economic Commission for Europe (ECE) referring to the problems connected with proliferation of larger containers and dimensional deregulation in this field, said that "this evolution has an adverse impact on road and rail infrastructure, the environment and the further development of combined transport in Europe, since it is becoming impossible to transport such large containers from ports into the hinterland of European countries without prejudging the loading gauge and road traffic interests of a large number of them."[9]

34. The ECE Inland Transport Committee endorsed the concern over the ever-increasing sizes of loading units used in combined transport. It pointed out that the evolution towards bigger dimensions of containers had already reached a point where the further development of combined transport was threatened. The Committee felt that this was an area where concerted international action at the governmental level was urgently required and that a common position on these developments had to be defined as soon as possible to ensure the intermodality and interchangeability of combined transport equipment in the future.[10]

35. In order to consider these problems, the Inland Transport Committee convened a "Seminar on the Impact of Increasing Dimensions of Loading Units on Combined Transport" in Geneva in November 1989. The aim of the Seminar was "to consider a long-term strategy on maximum dimensions of loading units, notably containers, which would be acceptable to all parties concerned in line with existing and planned national inland regulations and infrastructure requirements". The purpose was to

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8 According to a definition of this equipment given by the ECE Group of Experts on Combined Transport, "a swap-body is a container designed especially for combined road and rail transport which, however, cannot be stacked and cannot be lifted by its top." (TRANS/GE.24/14, para. 130).

9 ECE/(44)L.13, Decision K(44).

10 ECE/TRANS/74, paras. 183-186.

provide standardization organizations, transport operators, shippers and investors in combined transport equipment with the information they needed for rational planning and decision making in this field.

36. Taking into account the world-wide character and urgency of the questions included in the programme of this Seminar, as well as the close involvement of the UNCTAD Committee on Shipping in the activities related to international standardization of containers, the UNCTAD secretariat actively co-operated in the preparation of the Seminar and invited States members of UNCTAD to participate in it. Thirty-four countries, of which 11 were developing, attended the Seminar, and 22 international organisations, including UNCTAD and ESCAP, also took part.

37. The Seminar adopted a resolution urging the standardization organisations to recognize the importance of the continued use of present container standards and to take due account of limitations of existing infrastructure and of modularity of transport systems. The resolution also stated that no decision should be taken concerning new standards before comprehensive studies of their possible impact had been completed and conclusions been reached. The resolution finally recommended that the ECE Inland Transport Committee take appropriate initiatives for the execution, co-ordination and monitoring of these studies.[11]

Situation in developing countries

38. Since the biggest container transport operators using the larger and heavier containers supply their services throughout the world, carriers, operators and shippers in developing countries, to remain competitive, have to follow the developments in the field of container dimensions and ratings while experiencing difficulties in adapting their ports and transport systems to this evolution. It should be noted that, within the framework of ISO, developing countries object to changes in the present international container standards. At the fifteenth session of TC 104 in June 1989, India, Kenya and Malaysia stated that they would not accept the larger container standards owing to their inhibiting infrastructure and limited investment capability.

39. Furthermore, according to a report of the twelfth session of the Committee on Shipping, Transport and Communications of ESCAP, from 12 to 16 December 1988, many ports in the countries of that region are still coming to terms with transport requirements of the present ISO standard 20′ and 40′ containers. The report stated that the introduction of high-cube and high rated containers might cause particular problems for these ports. Up to the present, among the six ASEAN member-countries, only Singapore is considered able to accommodate the high-cube and 45′ containers.

40. In addition to this, according to reports in the maritime press,[12] the Philippines Port Authorities have not accepted proposals to use the 45′ containers as standard equipment. Aside from the need for costly adjustments in port facilitations nationwide, the authorities indicated that roads and bridges in the country were built to sustain only 20′ and 40′ containers.

41. At the same session of the Committee on Shipping, Transport and Communications of ESCAP, a study on the cost/benefit of transporting oversized[13] containers was requested and a project was consequently undertaken. The purpose of the project was to provide the countries of the region with guidelines to assist them in formulating policies for the inland movement of maximum dimension ISO containers. With this objective in mind the project was aimed at:

(1) Estimating present and future demand for inland movement of ISO containers and, in particular, high cube and oversize containers;
(2) Identifying constraints in ports, rail, road and inland waterway trunk routes;
(3) Recommending alternative methods of alleviating these constraints including the stripping of containers; and,
(4) Providing broad estimates of cost/benefits of implementing of recommendations.

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11 The report of the seminar will be made available to the fourteenth session of the Committee on Shipping.

12 Seatrade Week, Princton, N.J., Volume VIII, No. 13, March 24 - 30, 1989, p. 7.

13 According to the study in question, as oversize containers are considered containers with a length of more than 40′, mostly of 45′.

The result of this study may be of interest to the transport community as a whole and, when available, will be brought to the attention of the Committee.

42. According to preliminary findings of this study, which were made available to UNCTAD by the ESCAP secretariat, the "trade" has introduced the high-cube and oversize containers in the ESCAP region. For example, in 1988 the port of Singapore handled 96,980 units with a height of 9' and 1,645 with a length of 45', while the port of Bangkok handled approximately 1,000 containers with a length of 45' and it is expected that the number of 45' containers will reach 3,000 in 1989. Visits to the port of Manila led to estimates that approximately 20 per cent of all containers in the port were high cubes. In 1988 approximately 3,200 45' containers were handled and it was expected that this figure would increase to 4,600 in 1989.

43. The field studies in the ESCAP region indicated serious problems raised by the handling of high cube and oversize containers in the ports of this region and by their inland transport:

(1) In India the inland clearence depots (ICD) have all been designed to handle the present ISO 20' and 40' containers and handling of bigger containers would create difficulties. The Indian railways state that the movement of bigger containers is not possible owing to infrastructure constraints and lack of adequate rolling stock;

(2) Handling of 45' containers in Bangkok raised difficult problems and their transportation on public highways is officially not allowed;

(3) The Indonesian port authorities, aware of the problems with the handling, stacking and multimodal transport of 45' containers, do not allow these containers to arrive in their ports and this point of view has been communicated to shippers and shipowners; and,

(4) In the ESCAP report "Major findings and recommendations for the development of rail containers transport between Malaysia and Thailand"[14] it was stated that at the moment it was impossible to carry the 9'06" high containers by the considered itinerary even with the use of special rail wagons with small diameter wheels (height of the platform floor: 900 mm).

44. Nevertheless, according to the preliminary conclusions of the report, handling and transport of non-ISO standard containers do not necessarily require adaptation or investments in infrastructure. Some adaptation or investment in adequate equipment, such as chassis and railway wagons, is sometimes enough to handle and transport high cube and oversize containers. However, the introduction of containers with a length over 45' length will require further consideration.

45. The Transport and Communication Division of the Economic Commission for Latin America and the Caribbean (ECLAC), in its document entitled "Structural changes in ocean-liner transport: Prospects and information for policy formulation"[15] of June 1987, took note of the growing tendency to utilize non-standard containers in major world trades. At country-level seminars in the ECLAC region, held during the latter part of 1987 and 1988 to evaluate that study, many port authorities expressed concern regarding the viability of earlier investments in port infrastructures.

46. With regard to the use of high-cube marine containers, many ports in the Caribbean have been handling these containers since they first were introduced. According to some port authorities, the 9'06" high containers have not created major problems in handling and stacking operations. However, the 48' containers were seen by one Central American port authority as creating problems because these overlong containers would not pass through the legs of its gantry cranes. Even though the containers may be constructed with corner fittings at the standard 40' positions, such units would have to be landed on the quay apron between the ship and crane. Many port authorities of this region have either purchased ship-to-shore container handling equipment or plan to do so. The possibility of an increase in the use of overlong containers has thus created numerous problems. In contrast, ship operators noted that part of the deck storage structure for containers could be modified to accept overlong units without great difficulty.

47. According to estimates made by the Transport, Communication and Tourism Division of the Economic Commission for Africa (ECA), high-cube containers contribute up to 10 per cent of the number of containers handled in African ports. The majority of containers were unstuffed within port

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14 TRANS/IRGM(6)/7, p. 6.

15 E/C.G.1463.

areas because transport and handling facilities in the region were not able to handle them.

48. ECA was of the opinion that the transport industry in Africa is concerned about the changes it will have to make to infrastructure and handling equipment in connection with the introduction of high-cube containers. Ports and transport operators in Africa have invested heavily in recent years to accommodate the present standard containers and are unlikely to be able to afford additional investments in equipment and infrastructure before they recover returns on investments already made for the present ISO standard containers.

49. In general, re-equipment with suitable rolling stock, port machinery and facilities, infrastructure adaptation for transporting containers with bigger dimensions could be well beyond the resources of many developing countries which only now are building their national transport systems to handle the existing ISO standard containers.

Chapter II

Statistical evaluation of the world container population

50. In view of the developments concerning the introduction of larger container dimensions and consideration within standardization organizations of new international container standards, it is important to know the share of such over-sized containers in relation to the total world container population and to follow evolutions in this field. This will help in assessing the desirability and necessity of incorporating new dimensions in the international standards or creating a completely different standard for a new generation of containers. Statistical data on the distribution of the world container population by length, height and width would be most useful in this work.

51. The first studies of the world container population were carried out at the end of the 1970s when the world container population reached about two million twenty-foot-equivalent units (TEUs) and it became clear that transportation of cargo in containers had become the predominant way of carrying general cargo.

52. The most comprehensive censuses of the world container population were carried out by the magazine Containerization International in 1978, 1980, 1983 and 1986. These censuses give the distribution of container population by ownership (shipowners and lessors) and by country. Analysis is made of the distribution of containers by length and height, by cladding material (steel, aluminium, plywood), by type of container and by age. Table 3 summarizes the results of total countings of the world container population made by Containerization International from which the increase in the world container population is readily seen:

Table 3

World container population

Year	TEUs	per cent*)	Actual units	per cent*)
1978	1,970,994	100	1,452,455	100
1980	2,499,456	127	1,913,398	131
1983	3,798,730	193	2,991,998	206
1986	4,778,866	242	3,623,092	249

Note: *) Percentages of 1978 population.
Source: Containerization International 1978 No. 11, 1980 No. 8, 1983 No. 9, 1986 No. 9.

53. Tables 4 and 5 give the picture of the evolution of the number of containers with different heights and lengths in actual units.

Statistics on containers entering the industry

54. For the purpose of the statistical treatment of developments in containerization, data concerning particulars of new containers entering the industry, such as their type, length, height, width and rating, are of special interest. In order to collect such data a questionnaire was sent by the UNCTAD secretariat to 44 container manufacturers selected with broad geographical coverage from those listed in Containerization International Yearbook, 1987. Only manufacturers with a production capacity of 5,000 containers or more per year were chosen. The manufacturers were asked to supply data on container production figures for 1985, 1986 and 1987 and estimations for 1988.

55. Table 6 shows the distribution of container production between the main world container producers in 1985.

Table 4

Evolution in containers with different heights (actual units)

Height	1978	per cent	1980	per cent	1983	per cent	1986	per cent
8′	318,701	24.3	358,586	18.7	283,486	9.5	216,946	6.0
8′06″	950,920	72.7	1,485,631	77.5	2,612,160	87.3	3,250,473	89.8
9′	8,850	0.7	9,490	0.5	6,127	0.2	8,180	0.2
9′06″	17,190	1.3	25,601	1.3	46,445	1.6	103,322	2.8
Others*	11,833	1,0	38,444	2.0	43,780	1.4	44,171	1.2
Total	1,307,494	100.0	1,917,752	100.0	2,991,998	100.0	3,623,092	100.0

Source: Computed from the censuses carried out by Containerization International.

Table 5

Evolution in containers with different lengths (actual units)

Height	1978	per cent	1980	per cent	1983	per cent	1986	per cent
10′	n/a	-	8,810	0.4	n/a	n/a	-	-
20′	871,625	66.7	1,292,690	67.4	2,141,987	71.6	2,425,331	66.9
24′	10,879	0,8	12,977	0,7	n/a	n/a	-	-
27′	3,278	0,2	3,196	0,2	n/a	n/a	-	-
30′	7,786	0,6	10,193	0,5	n/a	n/a	-	-
35′	60,267	4.7	63,277	3.3	54,453	1.8	36,482	1.0
40′	353,659	27.0	523,304	27.3	763,041	25.5	1,123,204	31.0
Others	-	-	3,305	0.2	32,517	1.1	38,075	1.1
Total	1,307,494	100.0	1,917,752	100.0	2,991,998	100.0	3,623,092	100.0

Source: Computed from the censuses carried out by Containerization International.

Table 6

World container manufacturing capacity in 1985

Production capacity of manufacturers	Nos of manu-facturers with indicated capacity	per cent of TEUs	Total production capacity in TEUs	per cent of TEUs	Actual production in 1985 total TEU	per cent of TEUs
5,000 TEU & more	43	35.0	813,300	90.0	489,325	90.5
10,000 TEU & more	26	21.0	704,600	78.0	438,320	81.0
Industry total	123	100.0	902,770	100.0	540,551	100.0

Source: Computed from the International Containerization Yearbook, 1987.

56. By far the biggest producer of containers is the Republic of Korea. In 1985 the output of the Republic of Korea's container industry was 167,500 TEUs, representing 31 per cent of the world's total container production. In 1988 this country produced 330,357 TEUs, or more than 50 per cent of the world's dry freight container manufacturing activity. Unfortunately, the figures for this country were not taken into account in the following analysis because they were not submitted to the secretariat by the manufacturers.

57. Although the secretariat only received 10 replies to its questionnaire (22.7 per cent reply rate), and although the replies only covered manufacturers that, according to Containerization International Yearbook, 1987 had a production capacity of 145,500 TEUs or about 16 per cent of the world production capacity for that year, and actually only produced 67,660 TEUs, the analysis of the composition of the part of the addition to the world container population is of interest, since the manufacturers who replied were situated in different regions of the world and represented different country groups.

58. The distribution of the new containers entering the industry during the period 1985-1988 by length and height drawn from the questionnaire is shown in table 7. The table shows that the share of 20′ containers in actual units was more than 60 per cent. However, in terms of TEUs, their proportion will be equal to or less than that of 40′ containers in new additions to the population. The stable presence of 45′ containers in the total production, as well as the appearance of 48′ and 53′ containers, should be noted. The share of 40′ containers entering the industry is increasing, which obviously reflects the requirements of users.

Table 7

Containers manufactured (in actual units) in 1985

1985					
Height	**20′**	**40′**	**45′**	**Others**	**Total**
8′	100	-	-	100	200
8.06′	36,784	8,767	-	352	45,903
9′00	-	-	-	-	-
9.06′	-	11,701	2,005	-	13,706
Others	-	-	-	527	527
Total	36,884	20,468	2,005	979	60,336

1986					
Height	**20′**	**40′**	**45′**	**Others**	**Total**
8′	350	-	-	300	650
8′06″	30,240	10,511	600	505	41,856
9′00″	-	50	-	-	50
9′06″	-	3,225	-	475	3,700
Others	-	-	670	1,500	2,170
Total	30,590	13,786	1,270	2,780	48,426

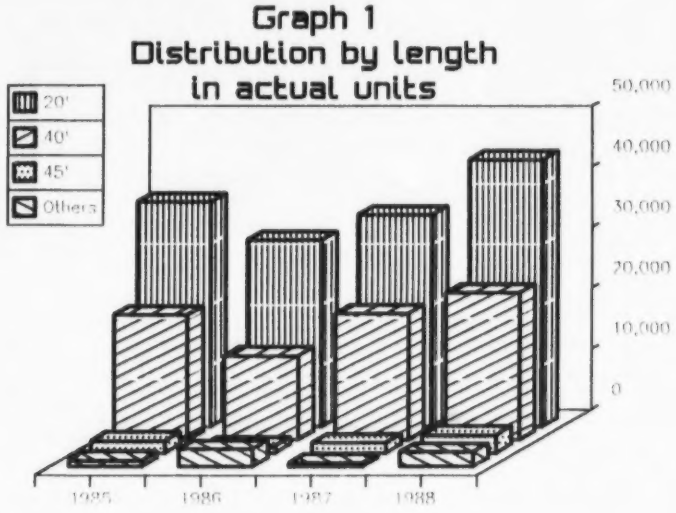
1987					
Height	**20′**	**40′**	**45′**	**Others**	**Total**
8′	-	-	-	430	430
8′06″	34,766	14,222	31	91	49,110
9′00″	-	200	-	-	200
9′06″	-	4,525	800	-	5,325
Others	-	1,800	830	-	2,630
Total	34,766	20,747	1,661	521	57,695

1988					
Height	**20′**	**40′**	**45′**	**Others**	**Total**
8′	-	-	-	100	100
8′06″	43,900	22,300	-	-	66,200
9′00″	-	300	-	-	300
9′06″	-	1,400	2,950	-	4,350
Others	-	100	-	2,183	2,283
Total	43,900	24,100	2,950	2,283	73,233

Source: Replies to the UNCTAD secretariat questionnaire.

59. Graphs 1 and 2 show that the vast majority of the newly constructed containers had a height of 8′06″ and a length of 20′ or 40′. At the same time, a significant share was high-cube containers with

heights of 9′, 9′06″ and 9′6.5″. It is interesting to note that the share of high-cube containers is decreasing in the sample survey. ISO containers with a height of 8′00″ have disappeared from the production lines. Containers with such height shown in Graph 2 are, in reality, small containers with a rating of 5,000 and 10,000 kg.



Source: Replies to the UNCTAD secretariat questionnaire.

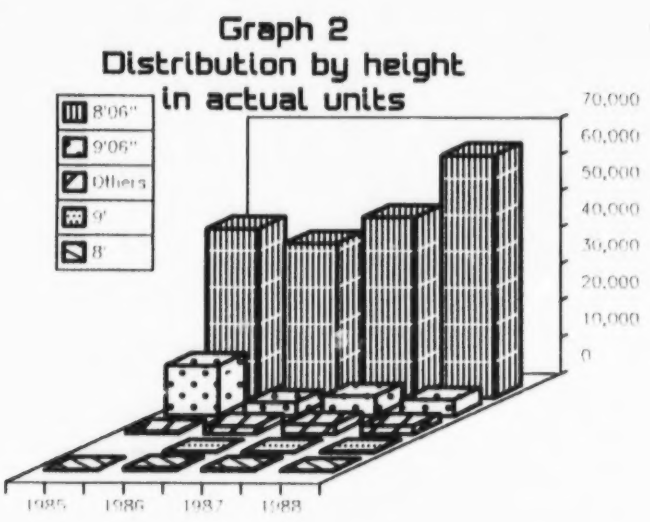
60. It should be noted that the manufacturers who supplied the data on production of containers with a 48′ and 53′ length indicated that these containers have a width of 8′06″.

61. One manufacturer indicated that some of his 40′ long and 9′00″ high containers were produced with a width of 2.5m. These containers, according to the manufacturer, are being used by the customer for short sea and inland transportation in Europe. These containers are all built with a 35,000 kg rating while 20′ containers were primarily produced with a 24,000 kg rating. Some 20′ containers were, however, produced with a 30,480 kg rating. One manufacturer indicated that, in 1986, 70 per cent of the 60,000 units production of 20′ containers was manufactured with a 24,000 kg rating and 30 per cent with a 30,480 kg rating. In 1987, the split had leveled to 50/50 per cent, and in 1988 changed further so that 20 per cent of 20′ containers were built with a 24,000 kg rating and 80 per cent with a 30,480 kg rating.

62. Another manufacturer advised that its 20′ containers were built with a 25 and 30 ton rating. None of the manufacturers who replied any longer produces 20′ containers with a 20,320 kg rating.

63. Most manufacturers indicated that their 40′ containers were built with a 30,480 kg rating. The containers with 45′, 48′ and 53′ lengths were also built with this rating. One manufacturer indicated a rating over 30,480 kg for the part of its 20′ and 40′ production.

64. Consequently, it could be concluded that the vast majority of containers entering the industry correspond to the present ISO standard 668 in relation to dimensions (20′ and 40′ length, 8′06″ height). This confirms the trend towards greater homogenity of the world container population. At the same time, certain manufacturers build part of their 20′ containers with the same rating as 40′ containers, i.e. 30,480 kg, but the proportion of such containers of the total number of containers produced is, as yet, relatively small.



Source: Replies to the UNCTAD secretariat questionnaire.

65. Nevertheless, in view of the relatively modest rate of reply to the secretariat's questionnaire limiting the size of the sample survey, it would seem useful for further surveys to be conducted at regular intervals, provided that the container manufacturing industry will be ready to supply the secretariat with the relevant data.